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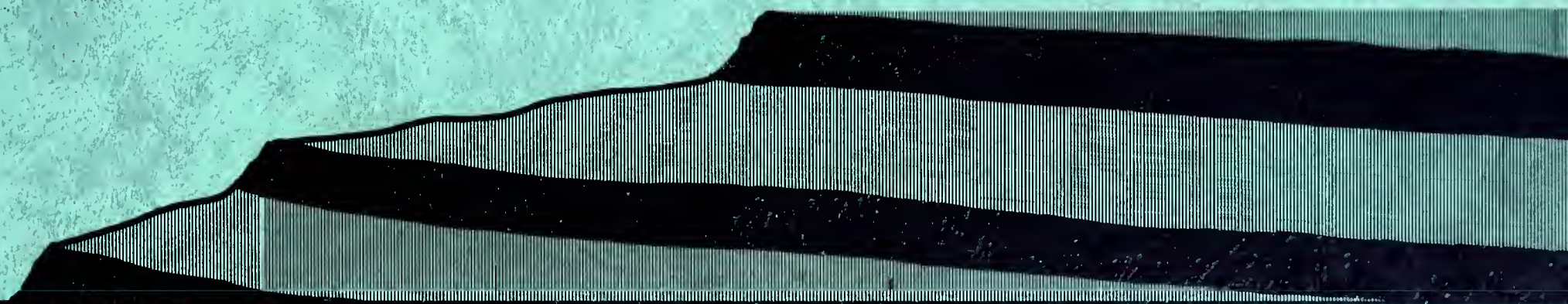
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Analyses and Measured Sections of Pennsylvania Bituminous Coals

By
Robert D. Sponseller



Mineral Resource Report 66

Analyses and Measured Sections of Pennsylvania Bituminous Coals

by Robert D. Sponseller

**PENNSYLVANIA GEOLOGICAL SURVEY
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PREFACE

The information compiled in this report on coal and rock units associated with coal in western and northern Pennsylvania will be of benefit to a wide audience. The data furnished in this report were collected during the period 1966-1968. Similar data collected and compiled in subsequent years will appear in later publications of this series. Geologists will find lithologic, paleontologic and mineralogic data useful for stratigraphic correlation, for determining possible environments of sediment deposition, and for obtaining more comprehensive descriptions of the rock types present over a broad area. The data on coal, particularly thicknesses and chemical analyses, will be useful to the coal-mining industry and for determining the future utilization of specific coal horizons. The data also provide information that is relevant to our increasing concern for natural resource exploitation that conserves the beauty and well-being of our environment; for example, problems of air pollution, water pollution, engineering construction, efficient mining technology, and rural or urban planning.

The photographs and the camera-ready copy for the data sheets in this report were damaged during the flood of June, 1972. Any lack of clarity in the photographs or blurred words in the data sheets are the result of water, oil and mud damage.

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ABSTRACT

Geologic data, obtained largely from stripping operations, are compiled for bituminous coals and for associated lithologies from 27 counties in western Pennsylvania. The coal data include megascopic descriptions such as seam and bench thickness, notation of partings, and notation of alteration, and proximate analyses, including sulfur content and Btu determinations. Most coal data are presented on a bench basis with chemical analyses recombined to a total seam basis. Stratigraphic data include unit thickness, lithologic characteristics (including gross composition, grain size, and color), weathering, paleontologic data, sedimentary structures, fracture data, and overburden character. Geological information, particularly unit thicknesses, overburden character, fracturing, bedding fissility, and sedimentary structures, is shown to be relevant to engineering, mining and environmental problems.

INTRODUCTION

HISTORY AND PURPOSE

Since 1930, an important part of the production of bituminous coals has been mined by open-pit stripping methods in Pennsylvania. The industry is a major contributor to the Commonwealth's economic wealth. In the course of these mining operations, much potentially valuable geologic information has been uncovered. In recent years, back-filling of open strip pits upon completion of an operation has rendered most of this information unavailable for future utilization by the mining industry or by geologists. Recognizing the unique opportunity for ob-

taining this information from stripping operations, W. E. Edmunds of the Pennsylvania Geological Survey in 1966 proposed and initiated a program of field study to record this information while it was still available. In 1969, the field data were supplemented by proximate analyses, including total sulfur and Btu determinations, made on samples collected from 1966 through 1968. Compilation and expanded coverage of this information is continuing and is kept on file at the Pennsylvania Geological Survey.

Publication of this lithologic and analytical information will make it more readily available for use by a wide public audience. For the geologist, valuable stratigraphic, structural and paleontologic data are included that will aid in understanding the geology of western Pennsylvania. For all potential users, this compilation will also provide information about coal, limestone, clay, shale, and sandstone—all resources of considerable economic importance. In addition, mining technology, engineering construction and pollution control can benefit from an understanding of these data.

LOCATION OF AREA

The area covered by this project is called the Appalachian Plateaus province and includes most of western and northern Pennsylvania (Figure 1). Of the 38 counties or parts of counties in this province, 25 were included in the 1966, 1967 and 1968 study. In addition, samples from Huntingdon and Bedford Counties in the Broad Top Coal Field (Figure 1) are included.

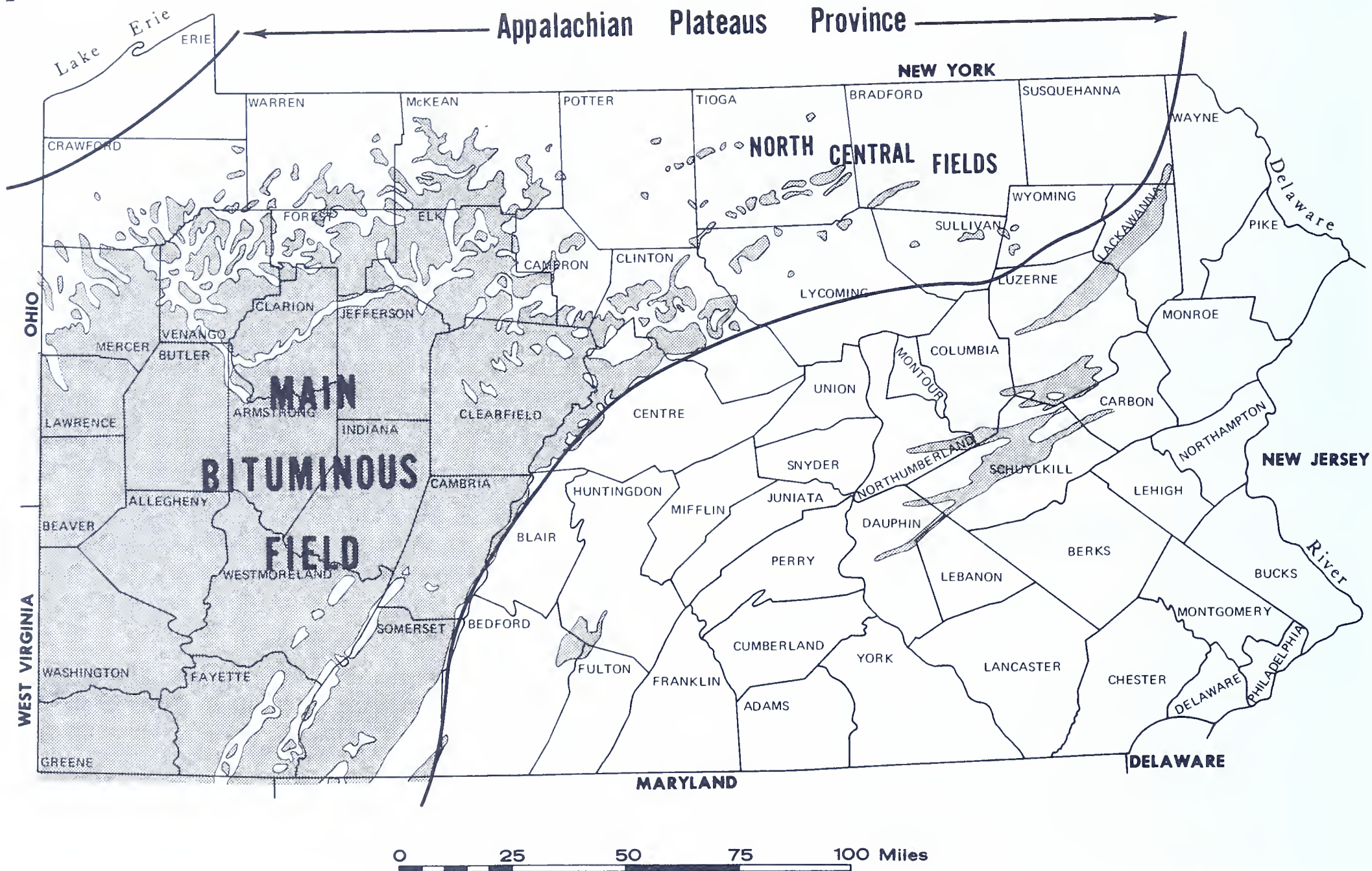


Figure 1. Location of area and distribution of coal fields.

ACKNOWLEDGEMENTS

The author acknowledges with appreciation the following persons: Dr. Davis M. Lapham, Chief of the Mineral Resources Division, for guidance during the project and for revision of the text; William E. Edmunds, head of the Coal Geology Section, who directed the field program; coal geologists Thomas M. Berg, Gary B. Glass and Albert D. Glover, who described the stratigraphic sections, collected samples, and assisted in the preparation of the data sheets; and Jack F. Wierman, Pennsylvania Department of Highways, who wrote a computer-calculation program for converting bench analyses to seam analyses. The following individuals assisted Pennsylvania Geological Survey staff geologists in the field: Charles T. Helfrich, Thomas W. Swinehart, David A. Anderson, Steven D. Potts, and Wilson C. Everhart. Albert Van Olden's fine drafting work is greatly appreciated, as is the patience and persistence of Mrs. Deborah Lehmer and Mrs. Terry Wilson, who typed the manuscript and data sheets. Finally, the author is grateful to the coal-mine operators whose permission to collect these data made this report possible.

STRATIGRAPHY

This report deals with essentially flat-lying rocks (Figures 3-8) of Pennsylvanian and Permian age (Figure 2). In addition to coal, the major rock types in this area are siltstone, limestone, shale, sandstone, and clay or claystone.

The names of the major coal units are schematically

illustrated in the columnar stratigraphic section of Figure 2. Additional names are used locally, particularly by mine operators (Appendix 1). For the most part, the names used on the data sheets are those of Figure 2, except where a local name was necessary for a unit of uncertain correlation. No attempt has been made here to correlate stratigraphic units. The identification of the coal seams are those of the operators except where otherwise indicated. This presentation of basic stratigraphic information may allow geologists and other interested users to refine or extend correlations from known areas to areas where the stratigraphic relationships are less certain.

Coal analyses on the data sheets include descriptions from low, medium and high volatile bituminous coals. As illustrated in Figure 1, volatility generally increases northwestward. From the information compiled here, the geographic distribution of volatility of a particular coal horizon also can be approximated (within the limits of accuracy of the analyses, as discussed subsequently).

All lithologic descriptions in the data sheets are based on megascopic examination.

RESEARCH PROCEDURES

FIELD SAMPLING

Active, or recently active, bituminous coal strip mine operations were selected for coal sample collection and stratigraphic data compilation. An attempt was made to select locations that would yield good geographic cover-

SYSTEM	GROUP	COALS	NAMES OF COAL BEDS Geographic names-first preferred
N	D	—	WINDY GAP
		—	GILMORE
I	R	—	NINEVEH
		—	KOSTETTER
M	A	—	FISH CREEK
		—	TEN MILE
R	N	—	UPPER WASHINGTON
		—	JOLLYTOWN
P	U	—	WASHINGTON A
		—	WASHINGTON
PENN.- PERM.	D	—	LITTLE WASHINGTON
		—	WAYNESBURG B
N	A	—	WAYNESBURG A
		—	WAYNESBURG
A	H	—	LITTLE WAYNESBURG
		—	UNIONTOWN
I	G	—	* SEWICKLEY
		—	* REDSTONE
N	U	—	PITTSBURGH RIDER
		—	PITTSBURGH
A	A	—	MORGANTOWN
		—	LITTLE PITTSBURGH
V	M	—	FRANKLIN
		—	LONACONING
L	E	—	HOFFMAN
		—	LITTLE CLARKSBURG
Y	N	—	CLARYSVILLE
		—	WELLERSBURG
S	O	—	BARTON
		—	WEST MILFORD
N	C	—	FEDERAL HILL
		—	DUQUESNE
E	A	—	HARLEM RIDER
		—	HARLEM
N	C	—	BAKERSTOWN
		—	THOMAS
N	C	—	BRUSH CREEK RIDER
		—	BRUSH CREEK
N	C	—	MAHONING
		—	PIEDMONT
N	C	—	* UPPER FREEPORT
		—	* LOWER FREEPORT
E	A	—	* UPPER KITTANNING
		—	* GORMAN
E	A	—	* MIDDLE KITTANNING
		—	* BENS CREEK
P	V	—	* LOWER KITTANNING
		—	SCRUBGRASS
P	V	—	* CLARION
		—	* BROOKVILLE
P	V	—	MERCER
		—	QUAKERTOWN
P	V	—	SHARON
		—	* Major Coals

Figure 2. Schematic columnar section of bituminous coals in Pennsylvania.

age for a wide distribution of geologic horizons. Sampling from old strip mines generally has been avoided because significant changes in coal composition result from prolonged weathering (Schopf, 1960); however, the stratigraphic information from such locations is valid and is therefore included.

Within each strip mine, a representative vertical section of each coal seam was sampled for eventual analysis. Small channel samples (8 ounces to one pound per bench) were taken from the top to the bottom to minimize contamination by caving from overlying units. Benches (discrete, rather uniform sub-units of a coal seam) generally were sampled and analyzed individually, except where the total seam thickness was small. Partings more than $\frac{1}{8}$ " thick were excluded, as were unusually large lenses or nodules (chiefly pyrite, siderite, and bone coal). Each coal bench sample was placed in a cloth sample bag, labeled, and taken to the Pennsylvania Geological Survey laboratory. All lithologic units and thicknesses have been numbered from the bottom to the top of a highwall. These units as presented on a particular data sheet may illustrate a specific highwall section. Where all units do not occur in any one vertical section of a particular strip mine (Figures 4 and 5), separate site numbers have been assigned.

Lithologic descriptions were recorded on a standardized field-data sheet (Figure 11) similar to, but more detailed than, the data sheets published here. For the purpose of description, each highwall was subdivided into gross units on the basis of lithology and/or the geologist's concepts of

depositional origin. Occasionally these gross units were again subdivided to permit more detailed lithologic distinctions.

LABORATORY PREPARATION AND ANALYSIS

The coal samples collected during each field season (1966, 1967 and 1968) were stored in their cloth bags until 1969, when they were prepared for analytical testing. During this time, storage temperature (a minimal range of 70-100°F) and humidity varied considerably. Oxidation was noticeable for some samples, particularly for sulfur-rich coals.

The individual coal samples were pulverized to minus-8 mesh (2380-micron standard sieve) in a rotary pulverizer. The coal sample was then processed through a riffle splitter to obtain a representative 15-gram sample for analysis. This split was then packaged in a paper sample envelope and immediately shipped to a contracted analytical laboratory. The remaining split was packaged in a self-sealing plastic bag and retained at the Survey.

Coal analyses, contracted on a lowest bid basis, were performed by E. L. Conwell and Company of Philadelphia (the 1966 samples) and Andrew S. McCreath and Son, Harrisburg (the 1967 and 1968 samples). Analytical techniques were specified to conform to ASTM standards within the limit of weight of sample supplied (duplicate analyses could not be performed on the amount of sample supplied). The coal samples were analyzed on an "as received" basis (i.e., not air dried) for moisture, volatile matter, fixed carbon, ash, sulfur and Btu. All analyses

except sulfur are reported to the nearest 0.1 percent, by weight.

Utilizing a computer program, bench analyses have been recalculated to a weighted average for the entire seam (see data sheets). This seam average was computed by multiplying the ratio of bench thickness to seam thickness by each analytical component and averaging the components.

DATA LIMITATIONS

In utilizing the data contained on the data sheets, the limitations of the field and laboratory procedures must be kept in mind. Chief among these are that 1) some stratigraphic nomenclature may be incorrect, 2) the prolonged sample storage will have some effect on the analytical components of the coal, and 3) the analyses may not be directly comparable to bulk analyses on an "as shipped" basis because of the small, but hopefully representative, sample taken. Additionally, some analyses were made on samples from unmined benches and partings.

A preliminary study of the coal analyses for 1966, 1967 and 1968 samples by D. M. Lapham (personal communication) shows that the fixed carbon/Btu ratio has been affected by storage of the coal samples. Although not all coal samples show a storage effect, many do show a displacement to lower fixed carbon and/or a higher Btu. This effect is significant for about two-thirds of the samples stored 10 months or longer, as is the case for the sample analyses published here, but is noticeably less for samples stored 6 to 10 months (data on file, Pennsylvania Geol.

Survey). In the latter case, the variation in the fixed carbon/Btu ratio is of the same order of magnitude as differences among laboratories. In a preliminary comparison of laboratories, sulfur determinations appear to be the most consistent; differences are usually on the order of 0.1 percent.

Discrepancies and errors of lesser magnitude may arise from the small amount of sample chemically analyzed, from recording and sampling differences by the various field geologists involved in the program, and from an inability to completely describe some inaccessible portions of highwalls. Because of these latter two factors, absence of information in a particular category (e.g., fossil occurrence) cannot be construed to indicate absence of that item. Hence, it is not reliable to use negative evidence for correlation purposes.

MINING, ENGINEERING AND ENVIRONMENTAL GEOLOGY

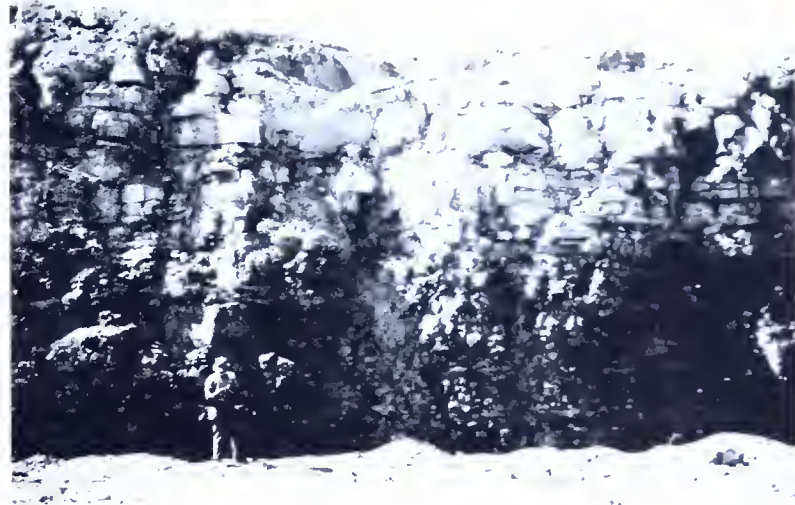
Geological information obtained from strip mine operations are illustrative of, and can be applied to, a wide range of technological and geological problems that relate to our environment. Such information may also be applied to general problems and to areas other than the bituminous coal regions of the Appalachian Plateaus. Examples of such applications are illustrated in Figures 3-10 and are briefly highlighted here.

Similar factors influence both the mining and construction industries. Type and thickness of lithology (Figure 3)

A



B



C

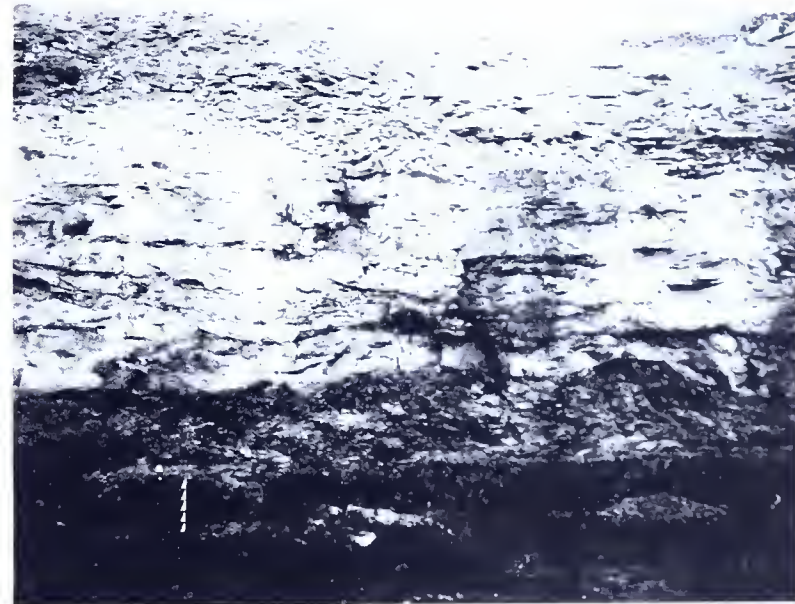


Figure 3. Variations in bedding and lithology. (A) Thin- to thick-bedded, easily rippable, structurally weak units above the Middle Kittanning ("C") coal; Clinton County, Site 94-27, 1968. (B) Massively bedded, competent unit above the Lower Kittanning ("B") or Middle Kittanning ("C") coal; Lawrence County, Site 5-13, 1968. (C) Thick- and thin-bedded units above the Clarion coal; Clarion County, Site 43-2, 1967.

are prime considerations. Thin-bedded, shaly units are apt to have a lower strength and are more easily rippable than more massive sandstone units that may require blasting. Abundance of joints (Figure 6), variability in the distribution of the sandstones, particularly the sinuous channel sandstones (Figure 4), and depth of weathering (Figure 6-B) also greatly influence rock strength and the ease with which overburden can be stripped. The presence of stratigraphic cut-outs or pinch-outs of coal seams associated with channel cutting (Figure 5) can have serious economic consequences.

Character of ground water, and particularly the problem of acid mine drainage (see references, Appalachian Regional Commission and report by Emrich and Merritt, 1969), is dependent upon geological considerations. For example, joints (Figure 6) allow the downward percolation of potentially acid mine water so that, instead of dissipating as runoff, it mingles with the ground water. Rolling floors (Figure 7), particularly on thick impermeable underclays, cause ponding of these acidic waters. Tabular or channel sandstones and glacial cover (Figures 4 and 8 respectively) may be sources of available ground water if these aquifers have not been drained by a close concentration of stripping operations and if backfilling has effectively restored them as producing aquifers.

Although other features such as clay dikes, siderite dikes (Figure 9), and fossil tree trunks (Figure 10) are of geological interest, they also may cause mining problems. When

present, they are visual indicators either of the environment at the time of sedimentation or of the secondary filling of joints.

EXPLANATIONS FOR DATA SHEET USE

LOCATING THE INFORMATION

Several methods of locating the information included on the data sheets have been incorporated in this publication. The data sheets are filed numerically within each county by a site number that appears at the top right and bottom right corner of each data sheet.

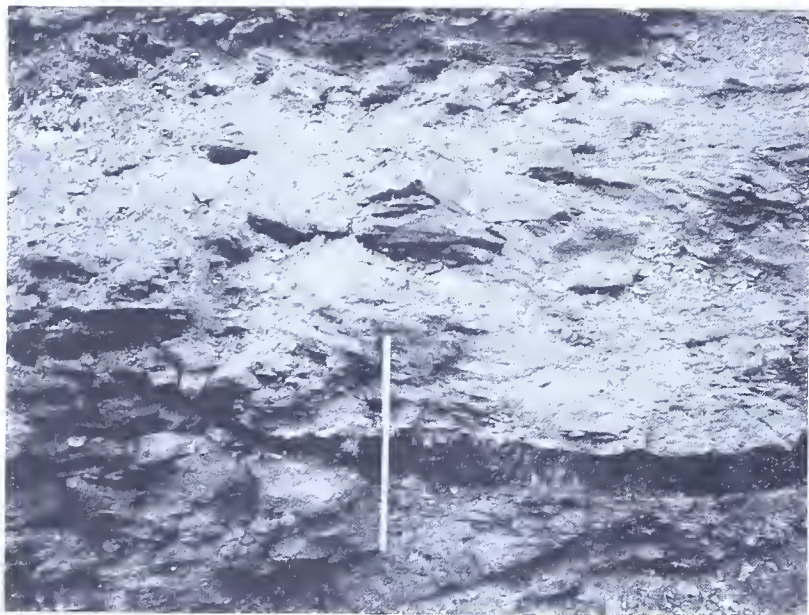
To locate the sites geographically, county maps at various scales with each site number plotted are included with the data sheets. Latitude and longitude scales are drawn on the maps and the latitude and longitude also appear in the heading of each data sheet. Other references to location include quadrangle name, county, township, and mine name (see data sheets).

The heading of each data sheet contains general information regarding the site. The body of each data sheet contains detailed information on the stratigraphy (from the basal to the uppermost lithology) and lithologic composition. Where the stratigraphic relationships are unusually complex, a clarifying sketch has been added. Miscellaneous notes and the abundances of certain lithologic characteristics are included in the last column, "Comments."



Figure 4. Channel and tabular sandstones. (A) A tabular, evenly bedded sandstone above the Upper Freeport ("E") coal; Armstrong County, Site 35-7, 1967. (B) Massively bedded and well-jointed channel sandstone ("shoestring sand") with clearly unconformable base; Clarion County, Site 44-9, 1967. (C) Channel sandstone (top right and center) above the Middle Kittanning ("C") coal; Somerset County, Site 68-12, 1966.

A



B



C



Figure 5. Cut-outs of lithologic units. (A) Pinch-out of the Upper Morgan coal; Tioga County, Site 132-3, 1968. (B) Partial cut-out (top center) of the Lower Freeport ("D") coal; Jefferson County, Site 55-4, 1967. (C) Massive and thin-bedded channeled units with no shale above the Sewickley coal, indicating a possible cut-out of the coal nearby.

A



B



C



Figure 6. Joints. (A) Closely spaced joints above the Middle Kittanning ("C") coal; Clearfield County, Site 94-2, 1966. (B) Intensely jointed lithologies; joints are more closely spaced in shale (above) than in sandstone (below); band of surficial weathering near top; above the Seymour coal; Tioga County, Site 122-2, 1968. (C) An open joint set in the floor of a stripping at Site 74-19, Clearfield County, 1968.



Figure 7. Rolling floor of Lower Kittanning ("B") coal; Westmoreland County, Site 48-4, 1968.



Figure 8. Thick glacial cover above Morgan coals; Tioga County, Site 132-2, 1968.



Figure 9. "Siderite dikes" filling (left of ruler) joints above the Lower Kittanning ("B") coal; Clinton County, Site 103-8, 1968.



Figure 10. Cast of an undisturbed fossil tree trunk above coal at Site 123-2, Lycoming County, 1967.

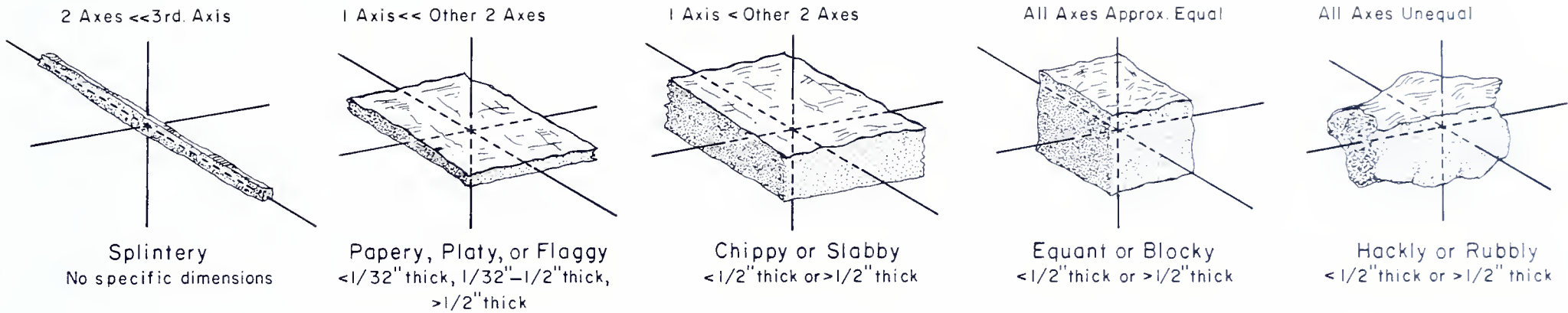


Figure 12. Fragment proportions.

EXPLANATION OF TERMS

Many of the terms used on the data sheets are abbreviated to conserve space or are specialized geological terms. A general explanation of the items included on each published data sheet is given in Figure 11 on the form used as a field data sheet, Figure 12 (terminology used for describing fragment proportions), Appendix 2 (lithologic abbreviations), Appendix 3 (lithologic classification of bedding fissility), Appendix 4 (Munsell Color Chart terms for describing rock color), and in the glossary. *These should be referred to for an adequate understanding of the information presented.*

Throughout the data sheets, the following terms denoting relative quantity have been used:

- a = abundant; a major percentage
- c = common; a minor percentage but easily observable
- r = rare; sparse or observed with difficulty

For the description of mica, in addition to these semi-quantitative modifiers, the following symbols for size groups are used:

1. $< 1/16$ mm
2. $1/16 - 1/2$ mm
3. $> 1/2$ mm

Normally, a mica description will involve both a letter and a number; e.g., "mica 1, r" meaning a mica in the size range less than $1/16$ mm that is a sparse component of that lithology.

GLOSSARY

a: abundant

banded coal: the common variety of bituminous coal which is composed of a sequence of irregularly alternating layers or lenses of bright vitrain, moderately bright to dull attrital coal, and soft, powdery fusain.

bench: subdivision of a coal seam based on lithology, partings, and/or minability.

binder: a layer of rock several inches thick separating coal benches (see “parting”)

bloom (sulfur): a sulfate oxidation product of a sulfide occurring on exposed coal surfaces.

blossom (of coal): extremely weathered coal of indeterminate thickness.

c: common.

carbonaceous: containing carbon; organic-rich material.

channel axis: the long axis of a (buried) stream channel.

clarain: a parallel-bedded ingredient in banded coal of silky luster; included in attrital coal.

conchoidal: curved, conch-like; refers to the shape of a rock fracture; usually in brittle homogeneous materials.

cut-out: an interval or area where strata have been removed by erosion and later filled in by sands, clays, etc.

durain: a hard material in banded coal having a granular texture and a matte surface; included in attrital coal.

Fe-stain: iron stain; an oxidation product occurring on weathered lithologies and composed of iron oxides and iron hydroxides (limonite, goethite, hematite).

flint (or semi-flint) clay: a hard, dense variety of underclay with little to no plasticity and a conchoidal fracture; often alumina-rich.

fossil hash: a concentration of the finely-divided remains of fossils in fragmentary form.

frag's: abbreviation for rock “fragments” (not used here for plant fossils).

friable: material that crumbles easily; poorly cemented or extremely weathered material.

fusain: a fibrous, carbon-rich, charcoal-like component of banded coal.

interbedded: alternating beds with different rock characteristics; thicker than laminae.

interlaminated: alternating rock layers with different characteristics of 1-centimeter or less thickness.

imbricated: overlapped, like roof shingles.

knife-edge: laminae or layers with a thin, knife-like edge.

laminae: layers 1 centimeter or less thick.

lenticle: a lens-shaped component or lithology.

lithology: the composition and character of a rock.

marine fossils: fossils of organisms that lived in a saltwater environment.

matrix: in a rock in which some grains are larger than the rest, the finer-grained material is called the matrix.

minus (-): sign that precedes a number meaning “less than.”

nonbanded (coal): the less common form of bituminous coal largely composed of attrital coal; homogeneous in appearance; includes cannel, or canneloid coal.

nonpersistent: not uniformly or regularly present; used here to refer to lithologies of short lateral extent.

parting: a generally thin layer of rock, pyrite, fusain, etc., in, or separating, benches of a coal seam.

peacock luster: iridescence on a coal surface caused by a thin film of a hydrated iron compound.

pinch-out (wedge-out): a thinning-out of a bed or stratum of rock by depositional or erosional processes.

plant fragments: irregular fragments of undifferentiated fossil plants; abbreviated plt. frgs.

plastic: capable of being molded; retaining a form.

plus (+): sign that precedes a number meaning “more than.”

pyrite: a yellow mineral sulfide of iron; called “fool’s gold” or “sulfur” locally.

reticulated: textured in the form of an irregular network; commonly of clay surrounding rock fragments.

root-worked: adjective applied to an ancient soil (paleosol or “seat rock”) with evidence of roots or root action; commonly a clay.

seam: a bed or stratum of coal.

septarian: irregular, polygonal, internal cracks in a concretion now occupied by other minerals, commonly calcite.

siliceous: containing silica or quartz, usually an abundant amount.

slickenside: a polished, striated surface indicative of rock movement.

slump block: a mass of sediment that has slid and been rotated from its original position.

sulfur bloom: see “bloom.”

vector, vectorial: a direction or directional quantity; indicative of directional motion.

vitrain: a glossy, friable component of banded coal with a rectangular fracture perpendicular to bedding.

vitreous: a glassy luster.

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APPENDIX 1

BITUMINOUS COAL NAME EQUIVALENTS

(from Edmunds and Koppe, 1968)

When mining began, the widespread occurrence of the coals was not recognized, and the beds were assigned local names. Detailed regional studies have made possible the correlation of most of the local names, but even today true correlations are not known for all of the coals, and local names are still in use in some areas.

The following list of some of the various names which have been, and in some cases are now, applied to coal beds is not complete, nor are all of the correlations certain. The following is a compilation of data from several published sources and from information in the files of the Pennsylvania Geological Survey.

BITUMINOUS COAL NAMES

PRINCIPAL NAMES

OTHER NAMES

DUNKARD GROUP COALS

Ten Mile
Jollytown
Washington
Little Washington
Waynesburg "B"
Waynesburg "A"
Waynesburg

MONONGAHELA GROUP COALS

Little Waynesburg
Uniontown
Bernwood

PRINCIPAL NAMES

OTHER NAMES

Sewickley

Mapleton (Green Co.); Meigs Creek, No. 8b (Ohio); Five-foot (Fayette Co.); Tyson, Berlin, Gas (Somerset Co.).

Redstone

Eighty-foot (Westmoreland Co.); Pine Hill No. 1 (Somerset Co.); No. 8a, Four-foot, Pomeroy (Ohio).

Blue Lick

Pittsburgh rider

Pittsburgh

Youghiogheny, Penn Gas (Irwin Basin); Murraysville (Westmoreland Co.); River (Washington and Greene Cos.); Irwin Gas, Greensburg, Connellsville (Fayette Co.); Big Vein, Pine Hill No. 2 (Somerset Co. and Maryland); Lisbon Gas, No. 8 (Ohio).

CONEMAUGH GROUP COALS

Little Pittsburgh

Franklin

Barington, Six-foot (Somerset Co.); Dirty Nine-foot (Maryland); Little Clarksburg, (W. Va.).

Hoffman

Lonaconing

Upper Clarysville

Lower Clarysville

Wellersburg

Berlin, Weller, Top Seam (Somerset Co.)

Barton

Federal Hill

Duquesne

Harlem

Platt, Weller, Fossil (Somerset Co.); Crinoidal (Ohio).

Upper Bakerstown

Elk Lick (Somerset Co.); Barton (Allegheny Co.).

Lower Bakerstown

Silver Valley (Somerset Co.)

PRINCIPAL NAMES	OTHER NAMES
Brush Creek	Farmington (Fayette Co.); Twin (Bedford Co.); Summit (Armstrong Co.); Mason (Ohio).
Mahoning	Speer (Broad Top Basin); East Palestine (Lawrence Co.).
Upper Freeport rider (s)	Piedmont (Somerset Co. and Maryland).

ALLEGHENY GROUP COALS

Upper Freeport	E; Cap Seam (Centre and Clearfield Cos.); Lemon (Cambria and Blair Cos.); Kelly (Broad Top Basin); Coke Yard, Johnstown, Four-foot, Ried, Lockport, Bolivar (Westmoreland, Indiana and Cambria Cos.); Hugus (Somerset Co.); Thick Freeport (Allegheny Co.); No. 7 (Ohio).
Lower Freeport rider (s)	
Lower Freeport	D; Moshannon (Centre and Clearfield Cos.); "M" (Elk Co.); Limestone (Cambria Co.); Reynolds Gas, Helvetia (Jefferson Co.); Schanz (Butler and Beaver Cos.); Dudley (Broad Top Basin), No. 6a (Ohio).
Upper Kittanning rider	
Upper Kittanning	C'; Johnstown, Cement, Cannel, Split C, Dirty C (Clearfield and Cambria Cos.); Blacksmith (Beaver Co.); Creek Vein, No. 4, Big Red, Rock Vein (Butler Co.); Barnettstown (Broad Top Basin).
Middle Kittanning rider(s)	
Middle Kittanning	C; Slate Vein (Centre Co.); Twin Bed (Broad Top Basin); No. 4, Sheridan (Ohio).
Lower Kittanning rider(s)	
Lower Kittanning	B; Miller, White Ash, Johnstown, Blacklick, Sonman (Cambria Co.); Dagus (McKean and Elks Cos.); Barnett

PRINCIPAL NAMES	OTHER NAMES
	(Broad Top Basin); Sulphur Vein (Beaver Co.); Kane Gas (Elk Co.); Big Bed (Lycoming Co.); Bloss (Tioga Co.)
Ferriferous	Limestone
Scrubgrass	Upper Clarion (Clarion, Butler and Venango Cos.); Clarion No. 3 (Clearfield and Centre Cos.).
Clarion	A'; Lower Clarion (Clarion, Butler and Venango Cos.); Sulfur Vein, Craigsville (Clarion Co.); Clarion No. 2 (Clearfield and Centre Cos.); No. 4a (Ohio).
Brookville	A; Lower Clarion; Pardoe (Mercer Co.); Craigsville (Clarion Co.); Clarion No. 1 (Clearfield and Centre Cos.); No. 4 (Ohio).

POTTSVILLE GROUP COALS

Upper Mercer	Brookville; Tionesta (Forest Co.);
Middle Mercer	Maple Grove (Mercer Co.); Alton
Lower Mercer	Coals (McKean Co.); No. 3, No. 3a (Ohio).
Quakertown	No. 2 (Ohio).
Sharon	No. 1 (Ohio).

APPENDIX 2**LITHOLOGIC ABBREVIATIONS**

Cgl:	conglomerate
Cl:	clay
Cl sh:	clay shale
Cover:	includes soil, glacial or fluvial material; unconsolidated
Cs:	claystone
Ls:	limestone
Ss:	sandstone
St sh:	silt-shale
Sts:	siltstone
Uc:	underclay
Isc sh:	interlaminated silt-clay shale
Isc st:	interlaminated silt-clay stone
Iss sh:	interlaminated sand-silt shale
Iss st:	interlaminated sand-silt stone

APPENDIX 3**LITHOLOGIC CLASSIFICATION BY
FISSILITY AND GRAIN SIZE**

(after Berg and Edmunds, Pa. Geol. Survey)

DOMINANT GRAIN SIZE	BEDDING FISSILITY	
	PLANES SPACED $> \frac{1}{2}$ "	PLANES SPACED $< \frac{1}{2}$ "
Granules & larger	Conglomerate (Cgl)	(Fissile conglomerate—theoretical)
Sand	Sandstone (Ss)	Fissile sandstone (mainly siliceous)
Silt	Siltstone (Sts)	Silt shale (St sh)
Clay	Claystone (Cs)	Clay shale (Cl sh)
Interlaminated sand & silt	Interlaminated sand-siltstone (Iss st)	Interlaminated sand-silt shale (Iss sh)
Interlaminated silt & clay	Interlaminated silt-claystone (Isc st)	Interlaminated silt-clay shale (Isc sh)

APPENDIX 4

MUNSELL COLOR CHART TERMINOLOGY

Black	=	bl.
Blue	=	be.
Brown	=	bn.
Gray	=	gr.
Green	=	gn.
Yellow	=	ye.
<u>Black to white</u>		
N1		black
N2		grayish black
N3		dark gray
N4		medium dark gray
N5		medium gray
N6		medium light gray
N7		light gray
N8		very light gray
N9		white
<u>Bluish grays</u>		
5B 5/1		medium bluish gray
5B 6/1		between medium bluish gray (5B 5/1) and light bluish gray (5B 7/1)
5B 7/1		light bluish gray
<u>Greenish black and grays</u>		
5G 5/1		between dark greenish gray (5G 4/1) and greenish gray (5G 6/1)
5G 7/1		between greenish gray (5G 6/1) and light greenish gray (5G 8/1)
5G 8/1		light greenish gray
5GY 3/1		between greenish black (5GY 2/1) and dark greenish gray (5GY 4/1)
5GY 4/1		dark greenish gray
5GY 5/1		between dark greenish gray (5GY 4/1) and greenish gray (5GY 6/1)
5GY 6/1		greenish gray

5GY 7/1	between greenish gray (5GY 6/1) and light greenish gray (5GY 8/1)
5GY 8/1	light greenish gray
<u>Olive and yellow greens</u>	
5GY 3/2	grayish olive green
5GY 4/2	between grayish olive green (5GY 3/2) and dusky yellow green (5GY 5/2)
<u>Yellow green</u>	
5GY 5/2	dusky yellow green
5GY 6/2	between dusky yellow green (5GY 5/2) and grayish yellow green (5GY 7/2)
5GY 7/2	grayish yellow green
<u>Grayish red</u>	
5R 4/2	grayish red
<u>Olive blacks to olive and yellow grays</u>	
5Y 2/1	olive black
5Y 3/1	between olive black (5Y 2/1) and olive gray (5Y 4/1)
5Y 4/1	olive gray
5Y 5/1	between olive gray (5Y 4/1) and light olive gray (5Y 6/1)
5Y 6/1	light olive gray
5Y 7/1	between light olive gray (5Y 6/1) and yellowish gray (5Y 8/1)
5Y 8/1	yellowish gray
5Y 3/2	olive gray
5Y 4/2	between olive gray (5Y 3/2) and light olive gray (5Y 5/2)
5Y 5/2	light olive gray
5Y 6/2	between light olive gray (5Y 5/2) and yellowish gray (5Y 7/2)
5Y 7/2	yellowish gray
5Y 8/2	lighter than yellowish gray (5Y 7/2)
5Y 6/3	between light olive gray (5Y 5/2) and dusky yellow (5Y 6/4)

Olive browns to yellow

5Y 4/4	moderate olive brown
5Y 5/4	between moderate olive brown (5Y 4/4) and dusky yellow (5Y 6/4)
5Y 6/4	dusky yellow
5Y 7/4	between dusky yellow (5Y 6/4) and grayish yellow (5Y 8/4)
5Y 6/5	between light olive brown (5Y 5/5) and dusky yellow (5Y 6/4)
5Y 5/6	light olive brown
5Y 6/6	between light olive brown (5Y 5/6) and moderate yellow (5Y 7/6)
5Y 7/6	moderate yellow

Brownish black to brownish and pinkish grays

5YR 2/1	brownish black
5YR 3/1	between brownish black (5YR 2/1) and brownish gray (5YR 4/1)
5YR 4/1	brownish gray
5YR 5/1	between brownish gray (5YR 4/1) and light brownish gray (5YR 6/1)
5YR 6/1	light brownish gray
5YR 7/1	between light brownish gray (5YR 6/1) and pinkish gray (5YR 8/1)
5YR 8/1	pinkish gray

Browns

5YR 6/4	light brown
5YR 7/4	between light brown (5YR 6/4) and moderate orange pink (5YR 8/4)

Grayish reds and orange pink

10R 4/2	grayish red
10R 8/4	lighter than moderate orange pink (10Y 6/2)

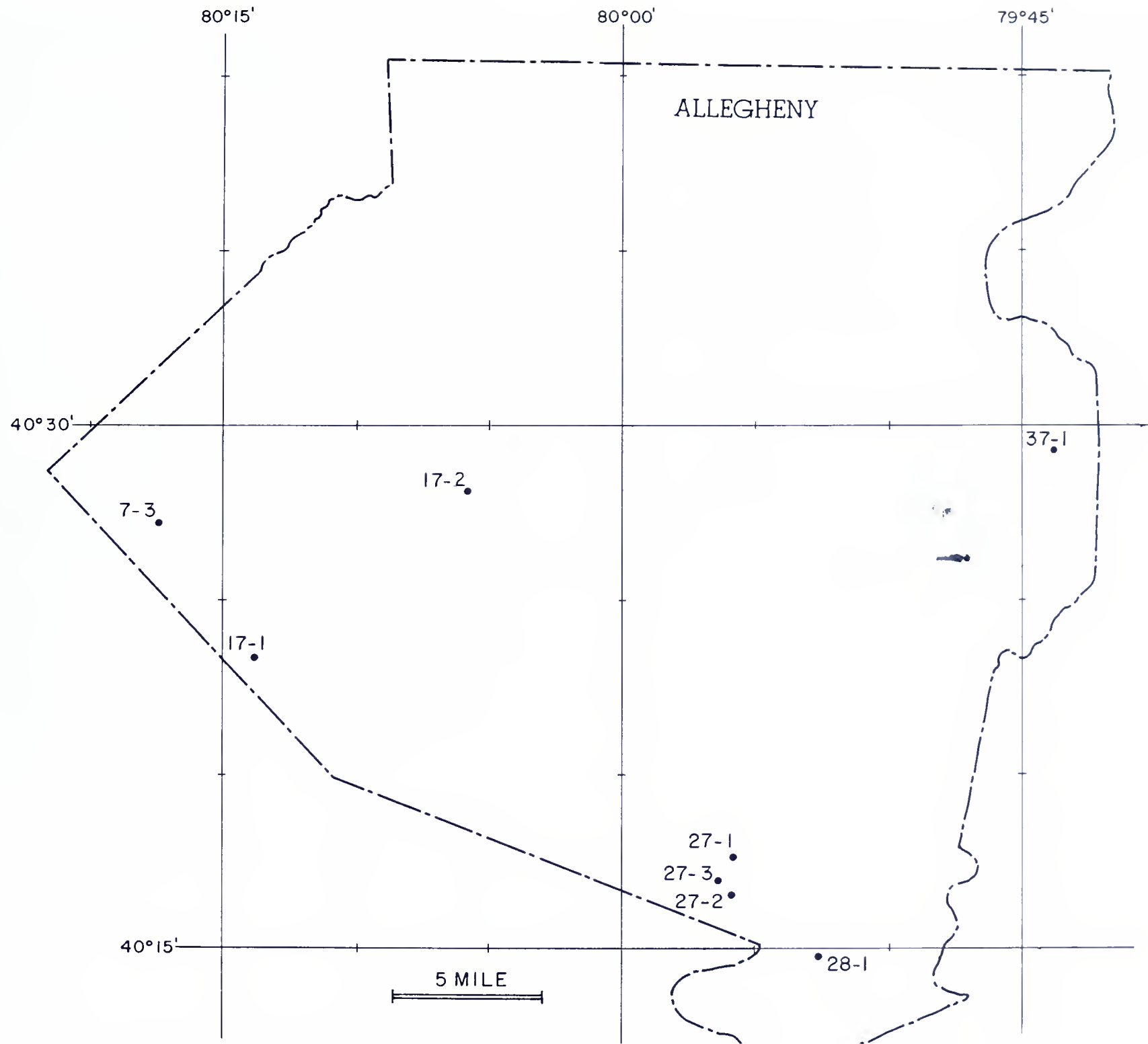
Grayish olive*

10Y 5/2	between grayish olive (10Y 4/2) and pale olive (10Y 6/2)
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Yellow brown, orange and grayish orange

10YR 4/2	dark yellowish brown
10YR 5/2	between dark yellowish brown (10YR 4/2) and pale yellowish brown (10YR 6/2)
10YR 6/2	pale yellowish brown
10YR 7/2	between pale yellowish brown (10YR 6/2) and very pale orange (10YR 8/2)
10YR 8/2	very pale orange
10YR 7/3	between pale yellowish brown (10YR 6/2) and grayish orange (10YR 7/4)
10YR 5/4	moderate yellowish brown
10YR 6/4	between moderate yellowish brown (10YR 5/4) and grayish orange (10YR 7/4)
10YR 7/4	grayish orange
10YR 8/4	lighter than grayish orange (10YR 7/4)
10YR 5/6	lighter than dark yellowish orange (10YR 6/6)
10YR 6/6	dark yellowish orange
10YR 7/6	between dark yellowish orange (10YR 6/6) and pale yellowish orange (10YR 8/6)
10YR 8/6	pale yellowish orange

DATA SHEETS



SITE/STATION NO. 7-3 (page 1)						LAT °N. 40°27'10"				COUNTY Allegheny				WEATHERING slight		JOINTING N22°E, N68°W.				
COAL SAMPLE NO.(S)						LONG °W. 80°17'17"				TWP. Findlay				COMMENTS						
COMPANY Aloe Coal Co.						GEOLOGIST wee				15' QUADRANGLE Burgettstown										
MINE Russell No. 2						PERMIT 35-1 (A)				DATE				7½' QUADRANGLE Clinton						
COAL(S) REPORTED Pittsburgh coal																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN- DANCE		THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
		Coal	0" - 6"		S	N1								B				Stringers. Coal is best developed where unit 5 is thickest, being to 50% of unit 5, represented by 3 stringers.		
		Sts			L	N3												Frag's. ½"+; hackly; coaly vitrain stringers.		
		St sh			L	N2												Fissile; beds variable; hackly; plt. frgs., leaves, a; brittle.		
5	2' 6"	Cs			L	N5												Slightly silty; frag's. ½"+; hackly; plt. frgs., r. Unit 5: Composed of: Cs, St sh, Sts, and coal stringers. Thickness varies laterally.		
4	2' 0"	Coal		0-24	S	N1								B				Cubic fracture; several fairly persistent partings 0" - ½", but locally to 3". Pittsburgh roof coal.		
3	1' 0"	Cs			S	N3												Frag's. ½"+; plt. frgs., leaves, c; hard; slickenside		
		Coal	2' 2½"	28-54½"	S	N1												Vitrain bands to ½" in upper 1'.		
		Fusain	0' ¼"															Parting.		
		Pyrite																		
2	4' 6½"	Coal	2' 3 3/4"	0-27 3/4"		N1								B				Unit 2: Large cubic fracture; coal, partings, r. Pittsburgh coal.		
1		Uc			S															

SITE/STATION NO. 7-3 (page 2)		LAT °N. 40°27'10"		COUNTY Allegheny		WEATHERING slight		JOINTING N22°E, N68°W.														
COAL SAMPLE NO.(S)		LONG °W. 80°17'17"		TWP. Findlay		COMMENTS																
COMPANY Aloe Coal Co.		GEOLOGIST wee		15' QUADRANGLE Burgettstown																		
MINE Russell No. 2		PERMIT 35-1 (A)		DATE		7 1/2' QUADRANGLE Clinton																
COAL(S) REPORTED Pittsburgh coal.																						
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
INTERVAL (TOTAL)	ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH											
	% ABUN- DANCE											THICK- NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
1' 2' - 4'	Cs	1' - 2'		G	5GY4/1																	Silty; frag's. 1/2"+; hackly, rubbly.
	Cs	1' - 2'		G																		Silty; frag's. 1/2"+; hackly, rubbly. Color: 5R 4/2-5R4/2 mixed with 5GY 6/1.
0' 0' - 35'	Cs			G																		Sandy; silty; frag's. 1/2"+; N5 with faint green cast; hackly, rubbly; mica l, c; small silty Ss stringers to a few inches, r. A channel filling.
9' 0' - 9'	Cl sh			G	N4																	Non-silty; fissile; beds-1/32" - 1/8" (beds and lenses 1"-1'); hackly; large-scale cross-beds dip N85°E; mica l, r; plt. frgs., r; 4 or 5 lenses of Ss similar to those of Unit 8.
3' 0' - 18'	Cl sh	17' 0"		G	N4																	Non-silty; fissile; beds -1/32"-1/8" (beds and lenses 1"-1'); hackly; mica l, r; plt. frgs., r.
	Ss			L	N8																	Fissile; beds 3"-3'; slabby; mica l - 3, c; plt. frgs., leaves, r; fine-and medium-grained, rounded, dark minerals, r. Thin silt laminae, r.
	St sh	1' 0"		G	N1																	Calcareous, carbonaceous, sandy; fissile; beds 1/8"-1/2"; chippy, hackly; coal stringers to 1/4", c. Unit 8: Large-scale cross-bedding dips N85°E.
	St sh	4' 0"		U	N1																	Fissile; beds 1/4"-1/2"; hackly.
1' 14' 0"	Cs	6' 0"		G	N2																	Fissile; beds 1/2" - 3"; slabby, blocky; dense.
	St sh	4' 0"		G	N1																	Fissile; beds 1/4"-1/2"; chippy; hard, brittle. Unit 7: A disconformity at top of unit.
5' 1' 7"	Coal	1' 7"	0-19	S	N1										B- MB							Cubic to irregular fracture; 0" - 1 1/2" of bony coal at 3" from top. Unit 6: Pittsburgh coal.

SITE/STATION NO. 7-3 (page 3)		LAT °N. 40°27'10"		COUNTY Allegheny		WEATHERING slight		JOINTING N22°E, N68°W.														
COAL SAMPLE NO.(S)		LONG °W. 80°17'17"		TWP. Findlay		COMMENTS																
COMPANY Aloe Coal Co.		GEOLOGIST wee		15' QUADRANGLE Burgettstown																		
MINE Russell No. 2		PERMIT 35-1(A)		DATE		7½' QUADRANGLE Clinton																
COAL(S) REPORTED		Pittsburgh coal.																				
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
							% ABUN- DANCE														THICK- NESS	
							> 60	30 - 60	15 - 30	0 - 15											> 1/4"	1/8" - 1/4"
T	105'																					
18	15' 0"	Ls				N7												Clayey; micritic; beds 1"-3"; separated by thin clay partings; weathered.				
		St sh	0' 3"			S N1												Clayey; fissile; beds 1/32" - 1/8"; chippy; plt. frg's., c.				
		Ls	0' 9"			G N5												Micritic; frag's. -½" to ½"+; "lumpy".				
		Uc	1' 6"			G N7												Non-silty; frag's. -½".				
17	3' 6"	Uc	1' 6"			G												Contains limonite nodules; color, a yellow stain.				
16a	2' 6"	cover																Covered interval.				
		Ss	3' 0"			5Y 6/1												Silty; fissile; beds 6"-1'; mica 1 - 2, c; fine-grained, angular, dark minerals, c; silt laminae, c.				
		St sh	2' 6"			G 5Y 4/1												Clayey, sandy; fissile; beds 1/8" - ¼"; chippy; plt. frg's., c.				
16	8' 6"	Ss	3' 0"			G 5Y 6/1												Clayey; fissile; beds 6"; mica 1 - 2, c; fine-grained, angular, dark minerals, c; silt laminae, c.				
		Iss sh	4' 0"			S N3, N7												Clayey; fissile; beds 1/8" - ¼"; chippy; mica 1, c; plt. frg's., leaves, a.				
15	7' 6"	Cl sh	3' 6"			G 5Y 4/1												Non-silty; fissile; beds 1/8" - ¼"; chippy, mica 1, c; plt. frg's., leaves, a.				
14	3' 6"	Cl sh				G N2												Fissile; beds -1/32" - 1/8"; hackly; plt. frg's., c.				
13	2' - 3'	Cs				S N6												Sandy, silty; calcareous; frag's. -½" - ½"+; hackly; rubbly.				
12	8' 0"	Ls				N7 - N8												Locally N5 (with red cast) to 5GY 8/1. Often bedded and reticulated with silty clay (N6 - 5GY 8/1), and some sandy St sh (5GY 6/1). Hard and dense (with conchoidal fracture) to soft, lumpy and clayey, with possible shell fragments and circular green spots (indicating carbonaceous material), mostly in blocks 1' - 3'.				

SITE/STATION NO. 17-1 (page 1)				LAT °N. 40°23'20"				COUNTY Allegheny				WEATHERING slight				JOINTING							
COAL SAMPLE NO.(S)				LONG °W. 80°13'54"				TWP. North Fayette				COMMENTS											
COMPANY Mac Coal Co.				GEOLOGIST wee				15' QUADRANGLE Carnegie															
MINE Mac No. 3				PERMIT 199-3				DATE				7½' QUADRANGLE Oakdale											
COAL(S) REPORTED Pittsburgh coal.																							
S T R A T I G R A P H I C D A T A												C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	C O A L								P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						A N T H R A X Y L O N								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE				THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
5	1' 3" - 1' 7"	Coal		0-19	S	N1									B						Fine cubic fracture, fine partings and fusain, a, in lower 9"; the balance a blocky fracture.		
5	1' 9" - 2' 0"	Cl sh	5"- 7"		S	N1 - N2															Very carbonaceous; beds -1/32"; papery; plt. frgs. a.		
		Coal	6"- 9"	0-9	G	N1									MD MB						Fine cubic fracture; fine partings, c, one to 3" locally.		
		Cl sh	7"-8"		G	N4															Silty; beds 1/32" - 1/8"; hackly; plt. frgs., a.		
4	1' 10"- 2' 2"	Coal	0' 10" -1' 2"	12-26		N1									B						Small cubic fracture; upper 1" - 2" dull bony coal; thin partings, c; fusain, a.		
		St sh	0" -4"																		Parting, fairly persistent.		
		Coal	1' 0"	0-12		N4									B						Small cubic fracture; thin partings, c; fusain, a.		
3	2" -6"	Cl sh			S																Silty; beds 1/32" - ¼"; hackly; plt. frgs., a.		
		Coal	3' 5"	20-61	S	N1									B- MB						Blocky fracture; thin pyrite-fusain partings.		
		St sh	0" -1"			N4															Parting.		
		Coal	0' 4 7/8"	15 1/8- 20		N4									B						Blocky fracture; thin pyrite-fusain partings.		
		St sh	1/8" - ½"			N4															Parting. Hackly.		
		Coal	1' 2"	1-15		N1									B						Fine cubic fracture.		
		Pyrite -Sh	0" -1"																		Parting.		
		Coal	0' 1"	0-1		N1									B						Fine cubic fracture. Unit 2: Pittsburgh coal.		
	Uc				S																		

SITE/STATION NO.		17-1 (page 2)		LAT °N.		40°23'20"		COUNTY		Allegheny		WEATHERING		slight		JOINTING				
COAL SAMPLE NO.(S)				LONG °W.		80°13'54"		TWP.		No. Fayette		COMMENTS								
COMPANY		Mac Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Carnegie										
MINE		Mac. No. 3		PERMIT		199-3		DATE		7 1/2' QUADRANGLE		Oakdale								
COAL(S) REPORTED		Pittsburgh coal.																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
							% ABUN - DANCE	THICK - NESS												
							> 60 30 - 60 15 - 30 0 - 15	> 1/4" 1/8" - 1/4" 1/32" - 1/8" < 1/32"												
T	63'																			
13	15' 0"	Ss	8' 0"															Weathered to 5Y 6/1; beds 1/8" - 1/4" (beds 1" at top) chippy; mica l, c; plt. frgs., c; silt to very fine-grained.		
		Cl sh	6' 0"		G	N5											Silty; beds 1/8" - 1/4"; chippy; mica l, c.			
		St sh	1' 0"		G	N1											Beds 1/32" - 1/8"; chippy; brittle; plt. frgs., c.			
12	18' 0"	Cs			S	N5												Silty, calcareous; frag's. -1/2"; weathers "lumpy" 5G 8/1 to 5B 7/1.		
		Ls				N6, 5G 6/1											Clayey; hard. Unit 12: Interbedded			
11	13' 0"	Cs	5' 0"		G	5G 5/1												Silty, calcareous; frag's. -1/2"; hackly; Ls nodules; crumbles to very fine chips.		
		Ls	8' 0"		G	5G 8/1											Silty, clayey; faint red tint; micritic; "lumpy"; small pyrite specks, c.			
10	22' 6"	St sh	7' 6"		G	N5												Beds -1/32" - 1/2"; platy, chippy, hackly; irregular shaped Ls nodules; "lumpy".		
		St sh	3' 0"		G	5Y 4/1											Beds 1/8" - 1/4"; faint red tint; hackly; "lumpy".			
		St sh	12' 0"		G	N3											Beds 1/8" - 1/4"; "lumpy" bedding; hackly; irregular shaped Ls nodules.			
		Coal	0" - 3"		S	N1											Shaly; mica l, a; fusain at bottom, a.			
9	8' - 10'	St sh			S	N3												Beds 1/4" - 1/2" (beds to 3", r); irregular fragments; plt. frgs., r.		
8	7' - 20'	Lss sh			S	N7, N3												Beds mostly 1/4" - 1/2" (beds 0' - 2'); chippy; plt. frgs. r.		
		Ss				N7											Beds 0' - 2'; mica l, r; plt. frgs. r; very fine- to fine-grained, clay matrix; hard; silt laminae, r. Unit 8: Ss and lss sh are interbedded.			
7	0' - 1' 6"	St sh			S	N4												Beds 1/8" - 1/4"; hackly; siderite nodules and bands; plt. frgs., a; brittle.		

[illegible]

SITE/STATION NO.		27-1 (page 1)		LAT °N.		40°17'32"		COUNTY		Allegheny		WEATHERING		slight		JOINTING							
COAL SAMPLE NO(S)				LONG °W.		79°55'55"		TWP.		Jefferson Boro.		COMMENTS						Redstone coal (Unit 2) being augered.					
COMPANY				Michael Rostosky Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Pittsburgh											
MINE		Bratovich		PERMIT		351-1		DATE		7 1/2' QUADRANGLE		Glassport											
COAL(S) REPORTED				Redstone.																			
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES					C O ' M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
2	3' 5"	Coal		0-41	S	N1														Semi-blocky to irregular fracture; no major partings thin partings in upper 1', c, fewer in lower portion Redstone coal.			
1	0' 6"	Cs - Uc			S	N5														Hard.			

STATION NO.	27-1 (page 2)	LAT °N.	40°17'32"	COUNTY	Allegheny	WEATHERING	slight	JOINTING	
SAMPLE NO(S)		LONG °W.	79°55'55"	TWP	Jefferson Boro.	COMMENTS	Redstone coal (Unit 2) being augered.		
COMPANY	Michael Rostovsky Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Pittsburgh				
E. Bratovich	PERMIT 351-1	DATE		7 1/2' QUADRANGLE	Glassport				
L(S) REPORTED	Redstone.								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
						% ABUN - DANCE		THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15						> 1/4"	1/8" - 1/4"				
62'																				
8' 0"	Ss	5' 0"			N7													Fissile; beds 1/2" - 2"; chippy; cross-bedding dip N35°W; mica 1 - 2, c; plt. frgs., r; medium-grained, clay matrix; limonitic.		
	Ss	3' 0"		G	N7													Fissile; beds 1/4" - 1/2"; hackly; cross-bedding dips N35°W; mica 1 - 2, c; plt. frgs., r; fine-grained clay matrix; limonitic.		
1' 0"	Cl sh			S														Fissile; beds -1/32" - 1/8"; weathered; chippy; limonitic.		
1' 0"	Ss			S	N7													Fissile; beds 1/4" - 1/2"; chippy; mica 1 - 2, c; plt. frgs., r; fine-grained, clay matrix; limonitic.		
4' 6"	Cl sh	2' 0"		S														Fissile; beds -1/32" - 1/8"; weathered; chippy; limonitic.		
	St sh	2' 6"		G	N1 - N2													Clayey; beds 1/32" - 1/8"; fissile; platy; plt. frgs., c; small limonite-filled, pinhead-size pits, c.		
13' 6"	Sts	3' 6"		S	N4													Beds 1" - 3"; frag's. +1/2"; blocky; Ls nodules, r.		
	Cs	10' 0"		G	N4													Silty; frag's. -1/2"; hackly; Ls nodules 0" - 3"; band of Ls nodules to 1" at 8' from bottom.		
30' 0"	St sh	5' 0"		G	N4													Fissile; beds 1/8" - 1/4"; chippy to hackly; siderite nodules; mica 1, c; sand laminae to 1", r.		
	Ss and lss sh	2' 6"		G	N7													Fissile; beds 1/4" - 1"; mica 1 - 2, a; very fine-grained.		
				N4 - N5												Fissile; beds 1/8" - 1/2"; chippy to hackly; siderite nodules; mica 1 - 2, a. Ss and lss sh are inter-bedded.				
	lss sh & lss st	5' 0"		G	N4 - N5												Fissile; beds 1/8" - 3"; chippy to hackly; siderite nodules; mica 1 - 2, a; "lumpy" irregular beds.			
	St sh	11' 0"		G	N4												Clayey; fissile; beds 1/8" - 1/4"; chippy; small siderite nodules in upper half.			
	Cl sh	2' 0"		G	N5												Silty; fissile; beds 1/8" - 1/4"; chippy; mica 1, c.			
	St sh	4' 6"		G	N2												Clayey; fissile; beds 1/8" - 1/4"; chippy to hackly; siderite nodules; plt. frgs., c.			

SITE/STATION NO.		27-2		LAT °N.		40°16'31"		COUNTY		Allegheny		WEATHERING		slight		JOINTING		N45°E, N45°W.			
COAL SAMPLE NO.(S)				LONG °W.				79°55'50"				TWP.		Jefferson		COMMENTS					
COMPANY				Q. & R. Coal Co.				GEOLOGIST		wee		15' QUADRANGLE		Pittsburgh							
MINE		Wray		PERMIT		422-1		DATE		7 1/2' QUADRANGLE		Glassport									
COAL(S) REPORTED				Redstone.																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
T	54'																				
5	5' 0"	Ss	2' 0"																Beds 1/8" - 1/4"; chippy; weathered.		
		St sh	3' 0"		G														Fissile; beds 1/32" - 1/8"; chippy; weathered.		
4	1' 2"	Cl sh			S	N1													Silty, carbonaceous; fissile, beds -1/32" to 1/2"; chippy; mica l, c; plt. frgs., a.		
		Uc	14' 0"		S	N6 - N7													Non-silty; frag's. -1/2"; hackly.		
		Cl sh	11' 0"		G	N5													Silty; fissile; beds 1/32" - 1/2"; hackly; mica l, c; sandy zones, r.		
		Cl sh	6' 0"		G	5Y 6/1													Non-silty; fissile; beds 1/4" - 1/2"; hackly; mica l, c; pit. frgs., leaves, c.		
		Ss	7' 0"		G	5Y 6/1													Silty, clayey; fissile; beds 1/2" - 3"; siderite nodules; mica l, c; silt to fine-grained; flat beds; Fe-sta		
		Ss	2' 0"		G	N3													Silty, clayey; fissile; beds 1"; mica l, c; silt to fine-grained; siderite?		
		Cs & Cl sh				N4													Silty; fissile; beds 1/4" - 3"; hackly, rubbly; plt. frgs., leaves, a.		
				Cs & Cl sh	3' 0"		G	N4												Note: Ss and Cs are interbedded.	
3	45' 0"	Sts	2' 0"		G	N1 - N2													Silty; fissile; beds 1/4" - 3"; hackly, rubbly; plt. frgs., leaves, a.		
																			Clayey; fissile; beds 1/8" - 1/4"; hackly; plt. frgs., leaves, a.		
2	3' 2"	Coal		0-38	S	N1						B							Upper 1"-2" D; no persistent partings, discontinuous partings in lower 6", c. Locally coal loses thickness from bottom making 2' 4" thick.		
																			Unit 2: Redstone coal.		
1		Uc			S	N7													Non-silty.		

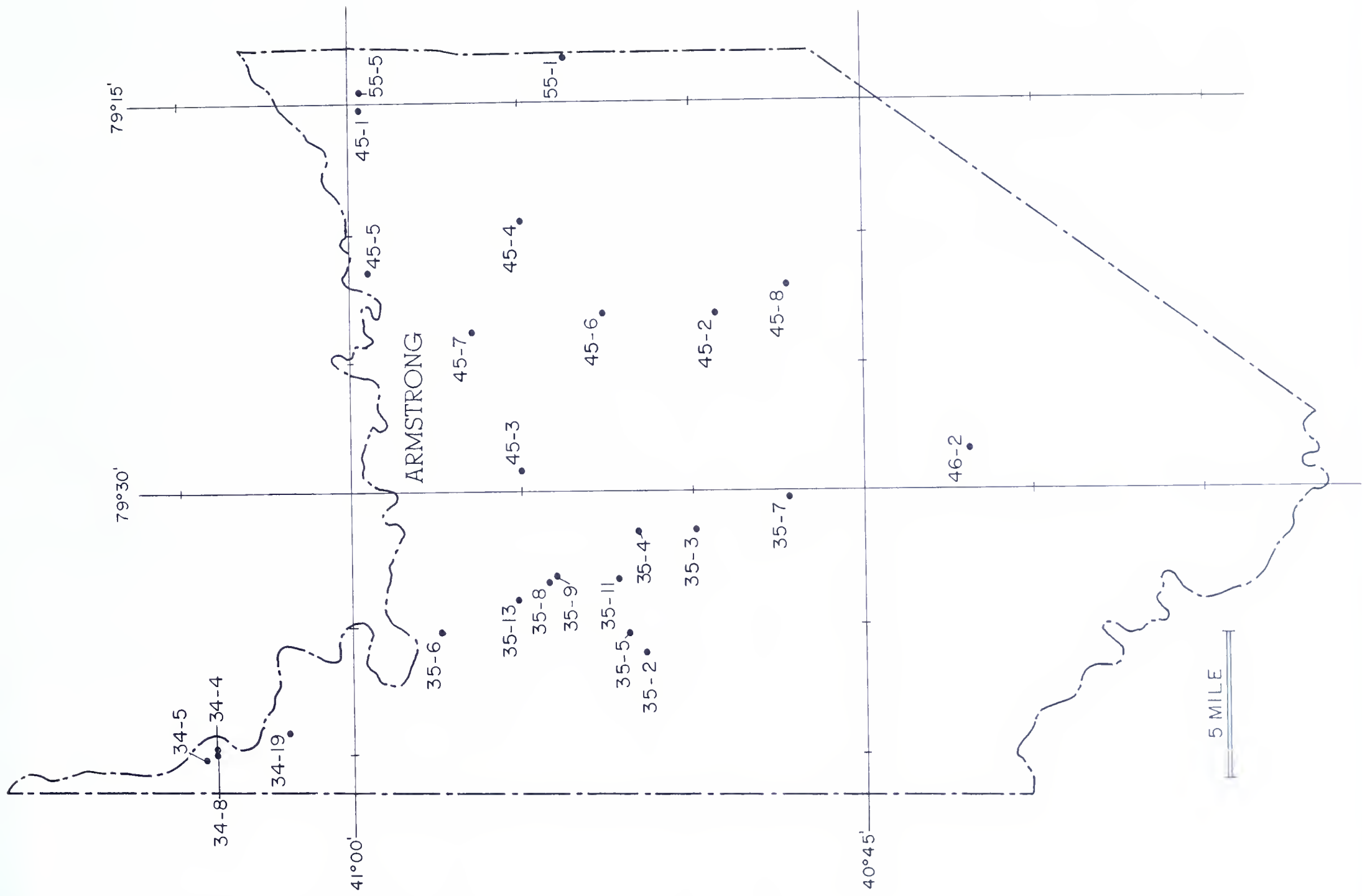
STATION NO.		27-3		LAT °N.		40°16'57"		COUNTY		Allegheny		WEATHERING		fresh		JOINTING										
SAMPLE NO.(S)		27-C-2		LONG °W.		79°53'58"		TWP.		Jefferson		COMMENTS														
ANY		Fred Fiore		GEOLOGIST		rds		15' QUADRANGLE		Pittsburgh																
		PERMIT		349-1		DATE		7-9-68		7 1/2' QUADRANGLE		Glassport														
(S) REPORTED		Redstone.																								
S T R A T I G R A P H I C D A T A																	COAL CHEMICAL ANALYSES					C O M M E N T S				
SS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS								
						ANTHRAXYLON			ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH													
						% ABUN- DANCE	THICK- NESS																			
							> 60	30 - 60						15 - 30	0 - 15					> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"			
INTERVAL (TOTAL)																										
26'																		Coals analyzed M/7-25-69								
	cover																	Grades downward to St sh.								
5' 0"	Ss			G	N6													Chippy; very fine-grained; carbonaceous laminae; beds 1/32" - 1/8".								
1' 0"	Ss			S	N6													Hackly; mica 3, a; fine-grained; carbonaceous film. Beds 1/2" - 3".								
7' 2'+	St sh	3'+		S	N4, N7													Platy; mica 3, a; interlaminated beds alternate between horizontal and cross-bedding. Joint faces coated with and fractures filled with a clay-limonite lithified material.								
	St sh Cl sh	8' 6" 5' 8"		G S	N4 N3													Platy; mica 1, c/a upward; beds 1/32" - 1/8". Silty; platy.								
0' 1 1/2"	Cl			S	N3													Silty; carbonaceous; extremely weathered (soft), possibly a fossil soil.								
3' 2"	Coal	1' 8"	18-38	S	N1	+				++ VB	1.2	32.5	52.4	13.9	2.92		12503	Hard; knife-edge pyrite streaks.								
	Coal	1' 0"	6-18		N1	+				++ VB	1.2	35.6	57.7	5.6	0.87		13913	Hard.								
	Coal	0' 6"	0-6		N1	+				++ MB	1.0	32.4	54.9	11.7	2.01		12800	Hard.								
											1.1	33.5	54.5	10.9	2.13		12998	Seam average of 27-C-2, Redstone coal.								
	Cl			S	N5													Semi-plastic; plt. frgs., a; slickensides.								

SITE/STATION NO.		28-1 (page 1)		LAT °N.		40°14'47"		COUNTY		Allegheny		WEATHERING		slight		JOINTING		N 47° W, only well developed			
COAL SAMPLE NO(S)		28-C-1, -2, -3		LONG °W.		79°52'37"		TWP.		Forward		COMMENTS		Units 13 - 16 extremely weathered.							
COMPANY		Q. & R. Coal Co.		GEOLOGIST		wee-wrw		15' QUADRANGLE		Brownsville		Small uniform section of Pittsburgh highwall re-									
MINE		Forward		PERMIT		422-2		DATE		6-3-68		7 1/2' QUADRANGLE		Monongahela		maining. Redstone uniform and weathered highw-					
COAL(S) REPORTED		Pittsburgh main seam, roof and rooster, and Redstone.										mostly backfilled.									
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE	THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
Coals analyzed M/7-25-69																					
Note:																					
		St sh	3' 6"		G	N4														See page 2 for continuing stratigraphy, Units 8 -	
		Cl sh	4' 0"		G	N3														Clayey; fissile; chippy; beds 1/4" - 1/2".	
		Cs	0' 3"		S	N2														Fissile; chippy; mica l, c; siderite; beds 1/8"-1/4".	
7	8' 6"	St sh	3" - 1'		S	N1 - N2														Approaches nonbanded coal; blocky, hackly, rubbly; l, a; hard; carbonaceous; frag's. 1/2" ±	
																				Clayey; fissile; chippy; mica l, a; plt. frgs., c; carbonaceous; beds - 1/32".	
6	0' 10"	Coal		0-10	S	N1			+		+	MD	0.9	29.9	42.8	26.4	5.85		10743	Partings to 1" thick locally, c; fusain, a. 28-C-3, Pittsburgh rooster coal.	
5	1' 9"	Cl sh- Cs			S	N2 - N3														Silty; subfissile; plt. frgs., c; coal stringers t thick, r; beds 1/32" - 1/8"; frag's. -1/2".	
4	2' 6"+	Coal	1' 3"	15-30	S	N1		+			+	MD	0.9	32.8	48.4	17.8	2.30		12244	Blocky; Anthraxylon to 1/4" thick, r.	
		Cl sh	1" - 1 1/2"		S	N3														Persistent parting; subfissile; chippy; beds 1/8"	
		Coal	1' 2"	0-14	S	N1		+			+	MB	1.0	31.7	50.2	17.1	1.79		12098	Rough to cubic fracture.	
													1.0	32.3	49.2	17.5	2.05		12173	Seam average of 28-C-2, Pittsburgh roof coal.	
3	1' 0"	Cs			S	N5														Hackly; frag's. -1/2".	
2	7' 0"	Coal	3' 11"	37-84	S	N1		+			+	MB	1.0	35.7	57.5	5.9	1.00		14010		
		Coal	3' 1"	0-37	S	N1		+			+	MB	1.0	33.4	54.7	10.9	4.28		13115	Persistent Sh partings (0' - 1/2") in upper 4".	
													1.0	34.6	56.2	8.1	2.44		13615	Seam average of 28-C-1, Pittsburgh main seam coal	
																				Unit 2: upper 5' blocky, lower 2' fine cubic frac thin partings every 3" - 6"; local pyrite lense; and pyrite & calcite on joint faces.	
1	0' 2"+	Cl sh			S	N3														Subfissile; chippy; beds 1/8" - 1/2".	

E/STATION NO.	28-1 (page 2)	LAT °N.	40°14'47"	COUNTY	Allegheny	WEATHERING	slight	JOINTING	N 47° W only well developed.
AL SAMPLE NO(S)	28-C-1, -2, -3	LONG °W.	79°52'37"	TWP	Forward	COMMENTS	Units 13 - 16 extremely weathered.		
MPANY	O. & R. Coal Co.	GEOLOGIST	wee-wrw	15' QUADRANGLE	Brownsville	Small uniform section of Pittsburgh highwall re-			
E	Forward	PERMIT	422-2	DATE	6-3-68	7 1/2' QUADRANGLE	Monongahela	maining. Redstone uniform and weathered highwall	
AL(S) REPORTED	Pittsburgh main seam, roof and rooster, and Redstone.					mostly backfilled.			

S T R A T I G R A P H I C D A T A						COAL CHEMICAL ANALYSES							C O M M E N T S							
CROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE		THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15							> 1/4"				
108'																				
1'+	Ss																	One bed, 1' thick.		
18' 0"	Cl sh			S	N4 - N5, 5Y 4/1													Fissile; platy, chippy; 1' - 2' silt shale bed 6" above bottom; beds 1/8" - 1/4".		
3' 9"	Coal		0-45	S	N1		+			+								2" bony zone 2' 3" from bottom. Redstone coal.		
18' 0"	Cs	10' 0"		S	10Y 5/2													Hackly.		
	Cs	2' 0"		G	5GY 5/2													Hackly. Contains micritic limestone nodules 2" - 6", N6.		
	Cs	6' 0"		G	5GY 5/2- 5GY 6/2													Hackly. Unit 13: Frag's. -1/2".		
6' 0"																		Covered interval.		
2'+	Ss				5Y 6/1													Fissile; slabby; mica 1 - 2, a; weathered; beds 1/2" - 3".		
12' 0"	St sh	9' 0"		S	5Y 5/2													Fissile; chippy; mica 1 - 2, c; beds 1/4" - 1/2".		
	lsc sh	3' 0"		G	N2, N4													Fissile; chippy; mica 1, c; beds 1/8"- 1/4".		
7' 0"	Cl sh			S	N2													Silty; fissile; slabby; mica 1, a; plt. frgs.,c; beds 1/8" - 1/4".		
4' 0"	Cs			S	N6 - N7													Silty; fissile; chippy, slabby; mica 1, c; plt. frgs., c; beds 1/4" - 3".		
15' 0"	lss sh			S	N3, N6													Fissile; chippy; mica 1 - 2, a; plt. frgs., c. Silt shale comprises 10% of unit; interbedded with Ss.		
	Ss				N7													Fissile; beds 3" - 4', mostly 1' - 2'; flaggy, slabby; mica 1 - 2, a; plt. frgs., r; very fine- to medium-grained; flat-bedded. Comprises 90% of unit; interbedded with lss sh.		
Note:																		See Page 1 for preceding stratigraphic Units 1 - 7.		

SITE/STATION NO.		37-1		LAT °N		40°29'15"		COUNTY		Allegheny		WEATHERING		moderate		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COAL SAMPLE NO.(S)		37-C-1		LONG °W.		79°43'45"		TWP.		Plum		COMMENTS		Units 5 - 8 briefly described during a storm.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COMPANY		Altmire Brothers Coal Co.		GEOLOGIST		rds		15' QUADRANGLE		Greensburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
MINE		Malissee Strip		PERMIT		29-10		DATE		7-22-68		7 1/2' QUADRANGLE		Murrysville																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COAL(S) REPORTED		Pittsburgh main seam and roof coal.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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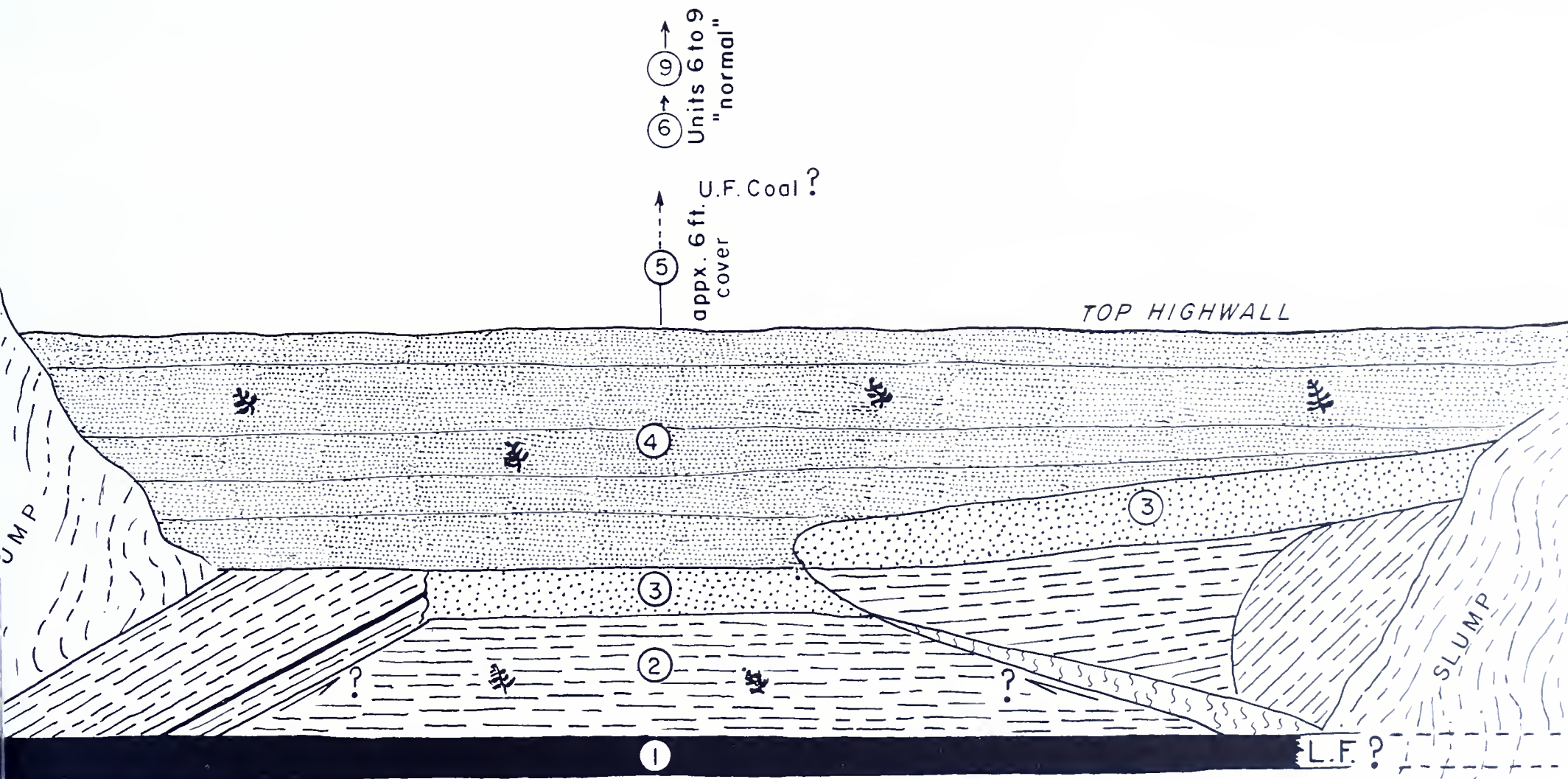
SITE/STATION NO.		34-4		LAT °N.		41°04'06"		COUNTY		Armstrong		WEATHERING		JOINTING							
COAL SAMPLE NO(S)		34-C-4		LONG °W.		79°39'50"		TWP.		Perry		COMMENTS Name of Mine: Say-Shakely-Hartman. 70' - 80'									
COMPANY		Richards Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Foxburg		interval between Lower Kittanning (B) coal (unit 2, Site 34-4)									
MINE see comments		PERMIT 54-1C		DATE		7-14-66		7 1/2' QUADRANGLE		Parker		and Clarion coal (unit 2, Site 34-5).									
COAL(S) REPORTED		Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	54'																				
10		Coal				N1												Blossom. Middle Kittanning (C)? coal. This coal and clay is locally cut out by Ss.			
9		Cl																Blossom.			
8	15' 0"	Cl sh				5Y 4/1												Beds 1/4" - 3"; siderite nodules in lower 3' - 4'.			
7	1' 0"	Cl sh			G	N4												Beds 1/32" - 1/4"; carbonaceous material, r.			
6	7' 0"	Cl sh			G	N6												Beds 1/4" - 1/2"; hackly; plt. frgs., r.			
5	0' 5"	Coal		0-5	S													Shaly.			
4	1' 0"	Cl sh			S	N5												Plt. frgs.			
3	27' 0"	St sh			G	N5												Beds 1/32" - 1/4"; siderite nodules, r; plt. frgs., c; <u>Lingula</u> sp. a few inches above bottom. Upper portic contains several thin Ss beds.			
2	2' 7"	Coal	1' 4"	15-31	S	N1		+		+	MD	1.8	31.5	56.0	10.7	1.94	12860	Bony.			
		Bone	0' 1/2"															Parting.			
		Coal	1' 2 1/2"	0-14 1/2		N1		++		+	+	MD	1.8	30.8	59.6	7.8	2.06	13220			
												1.8	31.2	57.7	9.3	2.00	13031	Seam average of 34-C-3, Lower Kittanning (B) coal.			
1		Uc			S																

[illegible]

STATION NO. 34-8 (page 2)		LAT °N. 41°04'03"		COUNTY Armstrong		WEATHERING fresh		JOINTING N45°E, E-W											
SAMPLE NO.(S)		LONG °W. 79°40'00"		TWP. Perry		COMMENTS													
PANY Richards Coal Co.		GEOLOGIST wee		15' QUADRANGLE Foxburg															
PERMIT 54-1C		DATE 5-19-66		7 1/2' QUADRANGLE Parker															
L(S) REPORTED Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A						C O A L C H E M I C A L A N A L Y S E S				C O M M E N T S									
UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				BRITISH THERMAL UNITS	
						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH
						% ABUN - DANCE				THICK - NESS									
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"						
71'																			
0' 6"	Coal				N1													Blossom (weathered). Middle Kittanning (C)? coal.	
6' 0"	Uc			S	N7													Frag's. -1/2"; <u>Stigmara</u> , c; weathered.	
5' - 22 1/2'	St sh			G	5Y 6/4													Clayey; beds 1/8" - 1/4"; chippy; mica l, c.	
1' - 2'	Cl sh			S	N1 - N2													Beds -1/32" - 1/8"; papery, platy; plt. frgs., leaves, r; white sulfide powder; purplish stain; brachiopods (<u>Aviculopectin</u> sp. and <u>Composita</u> sp.), a.	
1' - 5'	Sts - Ss	1' - 1 1/2'		S	N4													Beds 3" - 1' (1 or 2 beds); slabby; mica l, c; plt. frgs., leaves, c; silt to very fine-grained.	
	St sh	3' 6"		G	N4													Clayey; mica l, c; plt. frgs., leaves, r.	
0" - 3"	Coal			S	N1						D							Bony; blocky fracture. Horizontal now unconformable with units.	
34' 0"	St sh			S	N4, 5Y 4/1													Clayey; beds 1/32" - 1/4"; hackly; plt. frgs., leaves, c.	
	Ss				N7, 10YR 6/2													Beds 3" - 1'; slabby; mica l, c; silt to very fine-grained; dense, hard. Unit 5: A channel filling with E dipping lenses and wedges, unconformable with Unit 4.	
33' 0"	Sts	11' 0"		U	N5, N6													Beds 1/2" - 1' (mostly 1'); plt. frgs., leaves, c; upper 1', root-worked to a hard, dense, sandy clay.	
	St sh	7' 0"			N3													Beds 1/8" - 1/4"; hackly; mica l, c. Upper 3' very fine-grained Ss bed.	
	Cl sh	10' 0"			N4													Silty; beds 1/8" - 1/4"; hackly; siderite nodules to 1", r; mica l, r; plt. frgs., leaves, c.	
	Cl sh	5' 0"			N4													Beds 1/32" - 1/4"; hackly; siderite nodules to 1", c; mica l, r; <u>Lingula</u> sp. collected in lower 1'. Unit 4: Cut into by Unit 5.	
0' 7"	St sh	0' 4"		G	N1													Beds 1/32" - 1/8"; chippy; <u>Lingula</u> sp. collected in upper half.	
	Bone	0' 3"		G	N2													Beds 1/2" - 3"; blocky.	

SITE/STATION NO.	34-19	LAT °N.	41°01'55"	COUNTY	Armstrong	WEATHERING	fresh (units 1 - 5), extreme (units 6 - 9).
COAL SAMPLE NO.(S)	34-C-22	LONG °W.	79°39'16"	TWP.	Perry	COMMENTS	Highwall very complicated, about 40 yards exposed
COMPANY	Black Fox Mng. & Dev. Corp.	GEOLOGIST	adg	15' QUADRANGLE	Foxburg		Slumps have occurred. Dozer operator stated unit
MINE	Walley Haller	PERMIT	289-5	DATE	7-16-68	7 1/2' QUADRANGLE	Parker
COAL(S) REPORTED	Lower Freeport (D) and Upper Freeport (E).						cut out on western end of cut, also unit 1 is 1 charcoal and not saleable.

S T R A T I G R A P H I C D A T A																	COAL CHEMICAL ANALYSES						C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE				THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"	
T	53' - 60'																		Coals analyzed M/7-25-69					
9	18'+	Ss																	Fissile; flaggy; mica 2, a; fine- to medium-grained beds 1/2" - 3".					
8	6' 0"	Cl sh			G	N5													Fissile; platy; beds 1/4" - 1/2".					
7	2' 10"	Sh	0' 6"		S	N1													Coaly.					
		Coal	1' 3"	13-28		N1	+			+		MD						Not sampled.						
		Coal	1' 1"	0-13		N1	+			+		MD						Not sampled. Fusain knife-edge parting at top.						
																		Upper Freeport (E) coal.						
6	0' 6"+	Uc				N5													Stigmara, c; slickensides.					
5	6' 0"	cover																	Covered interval.					
4	14'+	Sts				N3													Fissile; platy; mica 1, a; plt. frgs., c; beds 1/8" - 1/4".					
3	3' 0"	Ss			G	5Y 6/1													Fissile; flaggy; mica 2, a; clay matrix; beds 3" - 1					
2	0' - 7'	Cl sh			S	N1													Fissile; platy; plt. frgs., leaves, c; beds 1/8" -					
1	2' 4"	Coal	1' 7 1/2"	8 1/2-28	S	N1	+			+		MD	1.9	35.2	52.4	10.5	6.14	13042	Bony streaks; pyrite.					
		Fusain	0' 1 1/2"		S														Parting.					
		Coal	0' 8"	0-8	S	N1	+			+	+		MD	1.7	34.4	52.0	11.9	3.24	12824	Slightly bony; pyrite.				
														1.8	35.0	52.3	11.0	5.30	12978	Seam average of 34-C-22, Lower Freeport (D) coal.				



NOTE: Clay shale units involved in slumping resemble unit 2

SITE 34-19

[illegible]

SITE/STATION NO.		35-4		LAT °N.		40°51'38"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING N80°E, N20°W, (coal-N39°E, N57°W)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
COAL SAMPLE NO.(S)				LONG °W.				79°31'22"				TWP.				East Franklin				COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
COMPANY				State Industries Inc.				GEOLOGIST				wee				15' QUADRANGLE				Kittanning																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
MINE				Adrian # 1				PERMIT				435-1				DATE				5-10-66				7 1/2' QUADRANGLE				Kittanning																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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E/STATION NO. 35-5 (page 1)		LAT °N. 40°51'55"		COUNTY Armstrong	WEATHERING fresh	JOINTING
AL SAMPLE NO.(S) 35-C-4		LONG °W. 79°35'20"		TWP. East Franklin	COMMENTS Coal wet when sampled.	
MPANY B. & G. Const. Co.		GEOLOGIST tmb	15' QUADRANGLE Kittanning			
IE Peach Hill		PERMIT 25-2A	DATE 6-16-67		7½' QUADRANGLE Kittanning	
AL(S) REPORTED		Upper Freeport (E).				

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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SITE/STATION NO.		35-5 (page 2)		LAT °N.		40°51'55"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING									
COAL SAMPLE NO.(S)		35-C-4		LONG °W.		79°35'20"		TWP.		East Franklin		COMMENTS		Coal wet when sampled.											
COMPANY		B. & G. Const. Co.		GEOLOGIST		tmb		15' QUADRANGLE		Kittanning															
MINE		Peach Hill		PERMIT		25-2A		DATE		6-16-67		7 1/2' QUADRANGLE		Kittanning											
COAL(S) REPORTED				Upper Freeport (E).																					
S T R A T I G R A P H I C D A T A																COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS					
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH			
							% ABUN - DANCE																		
							> 60.	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"										< 1/32"		
T	47'																								
8	5' +	Ss				5Y 6/2												Beds 1/2" - 3"; slabby.							
		Cl sh				5Y 6/2												Fissile; beds 1/4" - 1/2"; chippy. Unit 8: Grades upward, as shown.							
7	0' 3"	Cl sh				N1 - N2												Coaly; fissile; beds 1/8" - 1/4"; platy. Persistent.							
6	3' 6"	Cs				N5 - N6												Frag's. - 1/2"; hackly; Fe-stain.							
5	0' 1"	Cl sh				N4												Subfissile; chippy, hackly; rootlets, r. Persistent							
4	8' 0"	Cs			S	5Y 6/2												Frag's. 1/2"±; hackly, rubbly.							
3	26' 2"	Cl sh	2' 0"		G	N6												Subfissile; beds 1/4" - 1/2"; hackly.							
		Sts	4' 0"		G	N5												Subfissile; beds 1/2" - 3"; slabby, rubbly. Inaccess- sible.							
		Ss	1' 4"		S	N7 - N8												Solid, blocky; mica 1, c; plt. frgs., r; very fine- grained, excellent sorting, clay matrix, dark min- erals, r. Persistent.							
		lss st	13' 0"		S	N6												Beds 1/2" - 1"; flaggy, slabby; leaves, c; carbonaceo							
		lss sh			N6												Fissile; beds 1/4" - 1/2"; platy; leaves, c. lss st, ls sh interbedded.								
		Ss	1' 2"		S	N7												Fissile; beds 1/2" - 3"; slabby; mica 2, c; leaves, c; very fine-grained, clay matrix.							
		Sts			N5											Fissile; beds 1/4" - 1/2"; chippy; leaves, c. Sts and Ss interbedded; thicknesses vary between persistent lithologies.									
		St sh	4' 8"		S	N4												Fissile; beds 1/4" - 1/2"; chippy; leaves, c.							
		Cl sh			G	N3											Fissile; beds 1/4" - 1/2"; chippy; leaves, c; coaly at bottom. Cl sh grades upward into St sh, as shown.								

TE/STATION NO.	35-6 (page 1)	LAT °N.	40°57'23"	COUNTY	Armstrong	WEATHERING	fresh	JOINTING	
AL SAMPLE NO.(S)	35-C-5	LONG °W.	79°35'18"	TWP.	Sugarcreek	COMMENTS			
MPANY L. & E. Const. & Equip. Co., Inc.		GEOLOGIST	tmb	15' QUADRANGLE	Kittanning				
NE Crissman	PERMIT 26-2C	DATE	6-15-67	7 1/2' QUADRANGLE	East Brady				
AL(S) REPORTED	Upper Freeport (E).								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S				
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)						ANTHRAXYLON					ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE		THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"										1/8" - 1/4"
																		Coals analyzed M/7-7-69		
2' 10"	Coal	1' 2"	20-34	S	N1	+				+	+	+	MD	1.3	32.3	56.9	9.5	2.31	13092	Fusain partings, c; sulfur flowers.
	Coal	1' 8"	0-20	S	N1	+					+	+	D	1.7	32.6	59.6	6.1	1.41	13600	Cubic fracture; pyrite lenses scattered, r.
														1.5	32.5	58.5	7.5	1.78	13391	Seam average of <u>35-C-5</u> , Upper Freeport (E) coal.
	Uc			S	N3															Silty; hackly, rubbly; rootlets, c.

SITE/STATION NO.		35-6 (page 2)		LAT °N.		40°57'23"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING				
COAL SAMPLE NO.(S)		35-C-5		LONG °W.		79°35'18"		TWP.		Sugarcreek		COMMENTS								
COMPANY L. & E. Const. & Equip Co., Inc.				GEOLOGIST tmb		15' QUADRANGLE		Kittanning												
MINE		Crissman		PERMIT		26-2C		DATE 6-15-67		7 1/2' QUADRANGLE		East Brady								
COAL(S) REPORTED				Upper Freeport (E).																
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN- DANCE	THICK- NESS												
														> 60	30 - 60	15 - 30				
T	64'																			
8	15'+	Ss				5Y 5/2												Beds 1/2" - 1'; flaggy, slabby; mica 2 - 3, a; very fine-to fine-grained, clay matrix, dark minerals, c		
7	0' 6"	Uc				N5												Plastic, frag's. -1/2"; carbonaceous.		
6	1/2" - 1/4"	Coal			G	N1												Persistent. Not sampled or examined.		
5	6' 0"	Uc	4' 0"		S	N5												Frag's. -1/2"; hackly; rootlets, c.		
		Cs	2' 0"		G	5Y 5/4												Extremely friable, frag's. 1/2"±; hackly, rubbly.		
4	10' 0"	Ss			S	5Y 5/2												Beds 1/2" - 3"; slabby; mica 2 - 3, a; very fine-grained clay matrix. Ss and Sts, interbedded.		
		Sts	8' 6"			N4												Beds 1/2" - 3"; slabby; mica 2 - 3, a. Sts and Ss, interbedded; upper portion becomes hard and massive to the south.		
		Cl sh	1' 6"		G	5GY 6/1												Fissile; beds 1/4" - 1/2"; chippy.		
3	33' 2"	Cs	6' 0"		S	5B 6/1												Frag's. 1/2"±; hackly, rubbly; rootlets, r. Almost an Uc.		
		Cs			G	N5												Subfissile; beds 1/2" - 3"; rubbly. Graded upward from Cl sh.		
		Cl sh	14' 0"			N5												Subfissile; beds 1/2" - 3"; rubbly. Cl sh, grades up to Cs, as shown, becomes silty; sharp and brittle.		
		lss st			G	N6												Subfissile; beds 1/2" - 3"; slabby; siderite lenses, r nodules to 1 1/2"; mica 2 - 3, c. lss st and lss sh contains several persistent Ss tabular lenses to 3" thick, N6.		
		lss sh	11' 0"			N4												Subfissile; beds 1/2" - 3"; chippy; siderite lenses, r siderite nodules to 1 1/2"; mica 2 - 3, c. lss sh and lss st contains several persistent Ss tabular lenses to 3" thick, N6.		
		Ss	0' 8"		S	N6												Solid; mica 1, r; fine-grained, excellent sorting, clay matrix, dark minerals, c.		
		lsc sh	1' 6"		S	N3 - N4											Fissile, subfissile; beds 1/4" - 1/2"; chippy, hackly; leaves, trunks, c.			

SITE/STATION NO.		35-7		LAT °N.		40°47'18"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
COAL SAMPLE NO.(S)		35-C-6		LONG °W.		79°30'07"		TWP.		Manor		COMMENTS		Primary purpose of operation- removal of Ls under the coal. The coal has been previously deep-mined.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
COMPANY		Manor Minerals, Inc.		GEOLOGIST tmb		15' QUADRANGLE		Kittanning																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
LINE		Umbaugh		PERMIT 333-2 (A2)		DATE 6-12-67		7 1/2' QUADRANGLE		Kittanning																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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SITE/STATION NO.		35-8		LAT °N.		40°54'16"		COUNTY		Armstrong		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COAL SAMPLE NO(S)		35-C-7		LONG °W.		79°33'25"		TWP.		Washington		COMMENTS				Previously owned by: C.H. Snyder Co. The Upper																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COMPANY		State Industries, Inc.		GEOLOGIST		tmb		15' QUADRANGLE		Kittanning		Freeport (E) was mined off the top of the hill during WW II.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
MINE		Cowan strip		PERMIT		435-2		DATE		6-14-67		7 1/2' QUADRANGLE		East Brady		See Site 35-9 (435-2 mine permit) for a nearby stratigraphical																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COAL(S) REPORTED		Lower Freeport (D).														lower section including the Lower Kittanning (B) coal.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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STATION NO. 35-9		LAT °N. 40°54'05"	COUNTY Armstrong	WEATHERING fresh	JOINTING N80°W, N20°E.
SAMPLE NO(S) 35-C-8		LONG °W. 79°33'07"	TWP. Washington	COMMENTS Coal (Unit 3) is being augered to 200' under the hill.	
PANY State Industries, Inc.		GEOLOGIST tmb	15' QUADRANGLE Kittanning	See Site 35-8 (435-2 mine permit) for a nearby stratigraphically	
Cowan strip	PERMIT 435-2	DATE 6-14-67	7 1/2' QUADRANGLE East Brady	higher section, including the Lower Freeport (D) coal.	
(S) REPORTED Lower Kittanning (B).					

S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES					C O M M E N T S	
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS					
						ANTHRAXYLON								ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH		
						% ABUN- DANCE				THICK- NESS															
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"												
47'																			Coals analyzed M/7-7-69						
	Ss				10YR 7/4														Beds 1/2" - 3"; slabby; mica 2, c; fine-grained, clay matrix. Mostly float material.						
5' 0"	Cs			?	10YR 5/2														Hackly. Interval partially covered.						
1' 6"	Coal		0-18	?	N1														Bony. Not sampled. Interval partially covered. Middle Kittanning (C) coal.						
3' 0"	Cs			S	10YR 5/6														Crumbly to semi-plastic; hackly; Fe-stain, a.						
34' 0"	Cs	7' 0"		G	N7 - 5Y 8/2														Silty; rubbly.						
	Ss	7' 0"			N7 - N8														Subfissile; chippy.						
	Sh				5Y 8/1														Fissile; platy. Sh, Ss, interbedded; partially covered.						
	Cl sh	20' 0"			N3														Subfissile; beds 1/2" - 3"; hackly, rubbly; <u>Calamites</u> sp., r; N4, upward.						
2' 7"	Coal	0' 8"	23-31	S	N1		+			+		MD	1.4	36.8	52.7	9.6	4.40	13189	Pyrite partings, c; pyrite lenses to 3", r.						
	Coal	1' 11"	0-23	S	N1		+			+	+	MD	1.3	36.5	54.6	7.7	4.08	13479	Peacock lustre; pyrite partings to 1/2", r.						
													1.3	36.5	54.1	8.2	4.16	13404	Seam average of 35-C-8, Lower Kittanning (B) coal.						
1'+	Uc			S	N3														Hackly, rubbly.						

SITE/STATION NO.		35-11		LAT °N.		40°52'15"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING		Irregular																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
COAL SAMPLE NO(S)		35-C-11		LONG °W.		79°33'14"		TWP.		East Franklin		COMMENTS		Upper Freeport is 18' - 20' below, and has been																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COMPANY L. & E. Constr. & Equip. Co., Inc.				GEOLOGIST		adg		15' QUADRANGLE		Kittanning		deep-mined according to shovel operator. Unit:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
MINE		Shoffner		PERMIT		26-4		DATE		7-16-68		7 1/2' QUADRANGLE		Kittanning		3 - 5 inaccessible, not sampled or examined,																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

WELL/STATION NO.		35-13		LAT °N.		40°55'12"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING						
WELL SAMPLE NO.(S)		35-C-13		LONG °W.		79°34'05"		TWP		Washington		COMMENTS										
COMPANY				State Industries, Inc.		GEOLOGIST		adg		15' QUADRANGLE		Kittanning										
WELL NAME		Salak		PERMIT		435-5		DATE		7-16-68		7 1/2' QUADRANGLE		East Brady								
WELL(S) REPORTED				Lower Kittanning (B) and Middle Kittanning (C)?																		
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S							
ROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				BRITISH THERMAL UNITS					
INTERVAL (TOTAL)	A N T H R A X Y L O N						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)								
	% ABUN - DANCE														THICK - NESS				1/8" - 1/4"	1/32" - 1/8"	< 1/32"	
	> 60														30 - 60	15 - 30						0 - 15
84' - 85'																						
30'+	Ss					N7											Mica l, c; very fine- to fine-grained; clay matrix; limonite; beds 1/2" - 3'.					
0' - 1'	Coal				U												Occasionally cut out by Ss (unit 6). Middle Kittanning (C)? coal.					
22' 0"	Ss				S	N5											Very fine-grained; possibly Sts beds 3" - 2'. Upper 4' is Uc, N5.					
29' 0"	Cl sh				S	N3/N4											Subfissile; platy; siderite nodules, a; beds 1/8" - 1/4".					
3' 1 1/2"	Coal	0' 4 1/2"	33-37 1/2	S	N1			+		+	MD	1.5	37.5	53.7	7.3	5.10	13706	Slightly bony.				
	Sh	0' 8 1/2"		S														Thin coaly streaks.				
	Coal	2' 1 1/2"	0-24 1/2	S	N1			+		+	MD	1.4	38.6	52.1	7.9	3.36	13623	Pyrite.				
												1.4	38.4	52.4	7.8	3.63	13636	Seam average of 35-C-13, Lower Kittanning (B) coal.				
6'+	Uc				S													Semi-plastic to plastic.				

SITE/STATION NO.		45-1		LAT °N.		40°59'34"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING				
COAL SAMPLE NO.(S)		45-C-1		LONG °W.		79°15'07"		TWP.		Redbank		COMMENTS								
COMPANY R.D. Baughman Coal Co., Inc.				GEOLOGIST		adg		15' QUADRANGLE		Rural Valley										
MINE		Mudlick		PERMIT		151-22		DATE		7-20-66		7 1/2' QUADRANGLE								
COAL(S) REPORTED				Lower Kittanning (B).																
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O ' M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE													
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
T	35'																			
6		cover																Soil.		
5		Coal																Blossom.		
4	2' 0"	Uc				N6												Solid.		
3	30' 0"	Cl sh			G	N3, 5Y 4/1												Beds 1/4" - 1/2"; hackly; siderite nodules; fossils in lower 3'.		
2	3' 0"	Bone Coal	0' 7" 2' 5"	0.29	S	N1	+	+		+	+	MD	1.3	32.4	59.4	6.9	2.70	13680	Sh partings at bottom. 45-C-1, Lower Kittanning (B) coal.	
1		Uc																		

WELL/STATION NO. 45-2		LAT °N. 40°49'21"		COUNTY Armstrong		WEATHERING fresh		JOINTING	
WELL SAMPLE NO.(S)		LONG °W. 79°23'06"		TWP. Valley		COMMENTS Presence of <i>Aviculopectin</i> sp. makes Lower Freeport			
COMPANY L. G. Duncan		GEOLOGIST wee		15' QUADRANGLE Rural Valley		(D) identification unlikely.			
WELL Hawkins strip		PERMIT 279-2		DATE 5-10-66		7 1/2' QUADRANGLE -			
WELL(S) REPORTED		Lower Freeport (D).							

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES				C O M M E N T S				
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
						% ABUN - DANCE				THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
45'																					
8' 0"	Ss																		Beds 1" - 2"; fine-to medium-grained, clay matrix, dark minerals.		
3' 0"	Uc			S	N7														<u>Stigmaria</u> , a; highly carbonaceous zones.		
5' 0"	Ss	1' 6"		G	N7														Beds 1/2" - 3"; slabby; plt. frgs., a; fine-grained; Fe-stain.		
	Ss	3' 6"		S	N7														Solid; fine-grained; Fe-stain.		
7' 0"	Cl sh			S	5Y 6/1 5Y 4/1														Beds 1/8" - 1/4"; frag's. -1/2"; hackly; mica l, c; plt. frgs., <u>Stigmaria</u> , a; highly carbonaceous zones to 3". Uc?		
1' 6" - 4' 0"	Cs			G	5Y 6/1														Silty; frag's. 1/2"+; rubbly; mica l, c; plt. frgs., c; "lumpy."		
5' 0"	Sts			G	5Y 6/1														Clayey; beds 1/2" - 2"; mica l, c.		
13' 0"	Cl sh			S	N2														Fissile; beds 1/8" - 1/4"; chippy, hackly; siderite bands to 1/2"; plt. frgs.; <u>Aviculopectin</u> sp.		
2' 7"	Coal	0' 6"	25-31	S	N1														Coal, tough.		
	Coal	2' 1"	0-25	S	N1														Blocky fracture; thin partings, r.		
	Uc			S																	

SITE/STATION NO.		45-3		LAT °N.		40°55'00"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
COAL SAMPLE NO(S)		45-C-2, -3		LONG °W.		79°29'03"		TWP.		Washington		COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
COMPANY Hawk Bros. Const. Co.				GEOLOGIST tmb		15' QUADRANGLE		Rural Valley																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
MINE Kittanning Brick PERMIT 121-4				DATE 6-14-67		7 1/2' QUADRANGLE		-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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TE/STATION NO.	45-4 (page 1)	LAT °N.	40°54'57"	COUNTY	Armstrong	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	45-C-4	LONG °W.	79°19'30"	TWP.	Wayne	COMMENTS	Limestone occasionally sold for road metal. Upper		
COMPANY	Earl Houser Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	Rural Valley	Freeport (E) deep-mined earlier.			
LINE	Houser # 1	PERMIT	163-1C	DATE	6-13-67	7 1/2' QUADRANGLE	-	Units 7 - 9 inaccessible.	
COAL(S) REPORTED									Lower Freeport (D) and Upper Freeport (E).

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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SITE/STATION NO.		45-4 (page 2)		LAT °N.		40°54'57"		COUNTY		Armstrong		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		45-C-4		LONG °W.		79°19'30"		TWP.		Wayne		COMMENTS									
COMPANY		Earl Houser Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Rural Valley		Limestone occasionally sold for road metal, Upper Freeport (E) deep-mined earlier.									
MINE		Houser # 1		PERMIT		163-1C		DATE		6-13-67		7 1/2' QUADRANGLE		-		Units 7 - 9 inaccessible.					
COAL(S) REPORTED		Lower Freeport (D) and Upper Freeport (E).																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	59'																	Coals analyzed M/7-7-69			
13	18' 0"	Cl sh				N5												Silty; subfissile; beds 1/8" - 1/2"; chippy, hackly; 5Y 6/2, upward.			
12	1' 9"	Cl sh			G	N1												Fissile; beds 1/32" - 1/8"; papery, platy; siderite lenses near top, r; <u>Calamites</u> sp., r; N2 - N3, upward.			
11	4' 8"	Coal	0' 8"	48-56		N1												Bony; fissile; beds 1/32" - 1/8"; chippy. Not sample			
		Coal	1' 10"	26-48	G	N1	+				+	MD	1.4	34.2	56.1	8.3	2.36	13453			
		Coal	1' 3 1/2"	10 1/2-26		N1		+				+	MD	1.5	33.8	55.7	9.0	2.28	13381		
		Coal	0' 10 1/2"	0-10 1/2		N1			+			+	D	1.4	32.1	50.9	15.7	2.76	12050		
														1.4	33.6	54.8	10.1	2.42	13123		
10	1' - 2'	cover																Covered interval.			
9	1' 0"	Ls - ?																Resistant.			
8	0' 6"	Coal		0-6		N1															
7	3' 0"	Uc			S																
6	4' 6"	Cs			G	5Y 6/1												Subfissile; beds 1/2" - 3"; hackly, rubbly; partially covered.			
5	7' 6"	Ls			S	10YR 5/4												Fresh-water; irregular beds to 2' thick, solid; block micritic, detrital.			
4	7' 0"	lss st			S	5Y 6/1												Beds 1/4" - 3"; slabby, hackly.			
		lsc st				N6												Beds 1/4" - 1/2"; chippy.			
																		Unit 4: Interbedded ?; partially covered.			
3	0' 7"	Ss			S	N7												Solid; blocky; mica 2, r; plt. frgs., c; fine- to medium-grained, good sorting, clay matrix.			

ITE/STATION NO.	45-5	LAT °N.	40°59'28"	COUNTY	Armstrong	WEATHERING	JOINTING
COAL SAMPLE NO.(S)	45-C-5	LONG °W.	79°21'30"	TWP.	Mahoning	COMMENTS	Units 6 - 8 inaccessible.
COMPANY	Terry Reddinger	GEOLOGIST	tmb	15' QUADRANGLE	Rural Valley		
INE Reddinger strip	PERMIT 314-5	DATE	6-13-67	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Middle Kittanning (C)?						

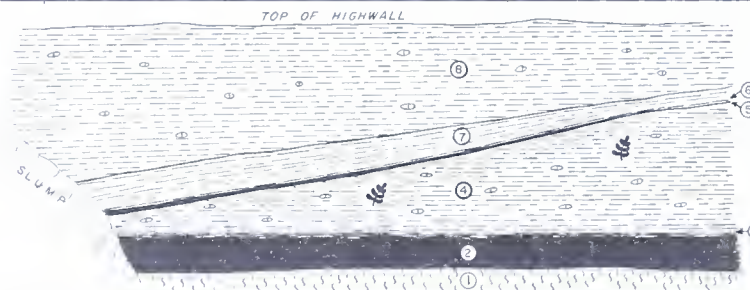
S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S			
GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
							ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE			THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
30'																		Coals analyzed M/7-7-69			
		Sh																			
2' 0"		Ls?																Fresh-water?			
16' 0"		C1 sh				N4												Fissile; beds 1/4" - 1/2"; chippy.			
1' 8"		C1 sh				N2												Subfissile; beds 1/2" - 3"; slabby; calcareous? <u>Linoproductus</u> sp., <u>Composita</u> sp. collected.			
3' 0"		C1 sh			S	N3												Fissile; beds 1/4" - 1/2"; chippy.			
5' 6"		C1 sh			S	N4												Fissile; beds 1/4" - 1/2"; chippy.			
2' 3"	Coal	1' 3"	12-27	S	N1		+				+	MD	1.5	37.1	57.2	4.1	1.33	14107	Cubic to uneven fracture; 1/4" fusain parting in middle.		
	C1	0' 2"		S	N3														Parting; frag's. -1/2"; hackly; rootlets, c.		
	Coal	0' 10"	0-10	S	N1		+				+	B-VB	1.5	34.3	56.9	7.3	1.84	13502	Uneven fracture.		
													1.5	36.0	57.1	5.4	1.53	13865	Seam average of 45-C-5, Middle Kittanning (C)? coal.		
		Uc			S	N4													Frag's. -1/2"; hackly; plant fragments?		

SITE/STATION NO.		45-6		LAT °N.		40°52'38"		COUNTY		Armstrong		WEATHERING		none		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
COAL SAMPLE NO.(S)				LONG °W.		79°23'05"		TWP.		Boqqs		COMMENTS						Stripping inoperative. Units 3 - 4 inaccessible.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
COMPANY		James E. Martin		GEOLOGIST		tmb		15' QUADRANGLE		Rural Valley																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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SITE/STATION NO.		45-7		LAT °N.		40°56'16"		COUNTY		Armstrong		WEATHERING		slight		JOINTING							
COAL SAMPLE NO(S)		45-C-6		LONG °W		79°23'47"		TWP		Madison		COMMENTS		Units 5 - 9 inaccessible.									
COMPANY R. D. Baughman Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Rural Valley													
LINE		Shoemaker		PERMIT		151-25		DATE		7-18-68		7 1/2' QUADRANGLE											
COAL(S) REPORTED				Upper Freeport (E).																			
S T R A T I G R A P H I C										D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON							ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE																
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"										
74' - 75'																			Coals analyzed M/7-25-69				
9			Ss																Fine-grained.				
3		12' 0" ±	Cl sh																				
7		3' - 4'	Cl sh			10YR 5/4													Silty; siderite nodules, c; limonite encrusted; slickensides.				
5		16' 0"	Cl sh		U	5Y 5/2, 5RP 2/2													Fissile; platy; beds 1/8" - 1/4"; upper 8' - 10' possibly a Cl.				
6		5' 6"	Ss		S	5Y 6/2													Subfissile; flaggy; beds 3" - 1'; mica 2, c; very fine- grained; with thin Cl sh interbeds.				
4		26' 0"	Cl sh		S	N4, 5Y 4/1													Fissile; chippy; siderite nodules and bands, c; 5Y 6/2 - 5Y 7/2, upward; beds 1/8" - 1/4".				
3		6' 6"	Cl sh		G	N3													Fissile; platy; siderite bands, r; beds 1/4" - 1/2".				
2		1' 6"	Cl sh		U	N4													Fissile; platy; siderite bands; trunks, a; thin Ss laminae, a; irregular contact; beds 1/8" - 1/4".				
3' 1"		Coal	2' 2"	11-37	S	N1		+			+	MB	1.0	35.3	59.3	4.4	1.03	14204	Pyrite.				
		Coal	0' 2"	9-11		N1				+		MD	0.9	31.6	52.1	15.5	2.34	12413	Bony; -1/4" fusain parting at top.				
		Bone	0' 1"																Parting; not sampled.				
		Coal	0' 6"	2-8		N1			+			+	MD	1.0	31.9	52.6	14.5	1.79	12510	Bony; slickensides.			
		Sh	0' 2"																	Coaly; not sampled.			
													1.0	34.5	57.7	6.8	1.24	13800	Seam average of 45-C-6, Upper Freeport (E) coal.				

SITE/STATION NO.	45-8	LAT °N.	40°47'22"	COUNTY	Armstrong	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO(S)	45-C-7	LONG °W.	79°22'00"	TWP.	Cowan-Shannock	COMMENTS	Units 5 - 7 appear to thin westward.		
COMPANY R. & P. Coal Co.		GEOLOGIST	adg	15' QUADRANGLE	Rural Valley				
MINE Margaret #1	PERMIT 482-1	DATE	7-15-68	7 1/2' QUADRANGLE	-	Unit 2 is being augered.			
COAL(S) REPORTED		Upper Freeport (E).							

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	28' - 43'																	Coals analyzed M/7-25-69			
8	18'+	Cl sh or Cs				5Y 6/4												Fissile; rubbly; siderite nodules, c; beds 1/2" - 1'			
7	2' 0" - 4' 4"	Sh				N1												Platy; beds 1/32" - 1/8".			
6	0' 2"	Sh				N1												Nonbanded, blocky; beds 1/32" - 1/8".			
5	0' 9 1/2"+	Coal	0' 8"	1 1/2-9 1/2	S	N1	+			+	MD							Very thin Sh partings.			
		Sh	1/2" - 1"		S													Parting; coal streaks.			
		Coal	0' 3/4"	0-3/4	S	N1	+			+	MD										
4	3' - 15'	Cl sh			S	5YR 4/1												Fissile; hackly, rubbly; siderite nodules, r; plt. frgs., leaves, a; beds 1/8" - 1/2".			
3	4" - 6"	Fusain																Irregular contact. Coal stringers.			
2	3' 11 1/2"	Coal	2' 0"	23 1/2-47 1/2	S		+			+	+	MB	1.3	35.7	57.4	5.6	1.74	14059	Pyrite.		
		Coal	1'	8 3/4 - 23 1/2	S	N1		+			+	MB	1.3	30.9	55.3	12.5	1.80	12945	Knife-edge parting at top.		
		Cl sh	0' 3/4"																Parting.		
		Coal	0' 8"	0-8	S	N1	+				+	MB	1.1	35.4	57.7	5.8	2.84	13889	Pyrite, r.		
													1.3	34.1	56.8	7.8	1.95	13678	Seam average of 45-C-7, Upper Freeport (E) coal.		
1		Uc			S	N5													Stigmara; slickensides.		

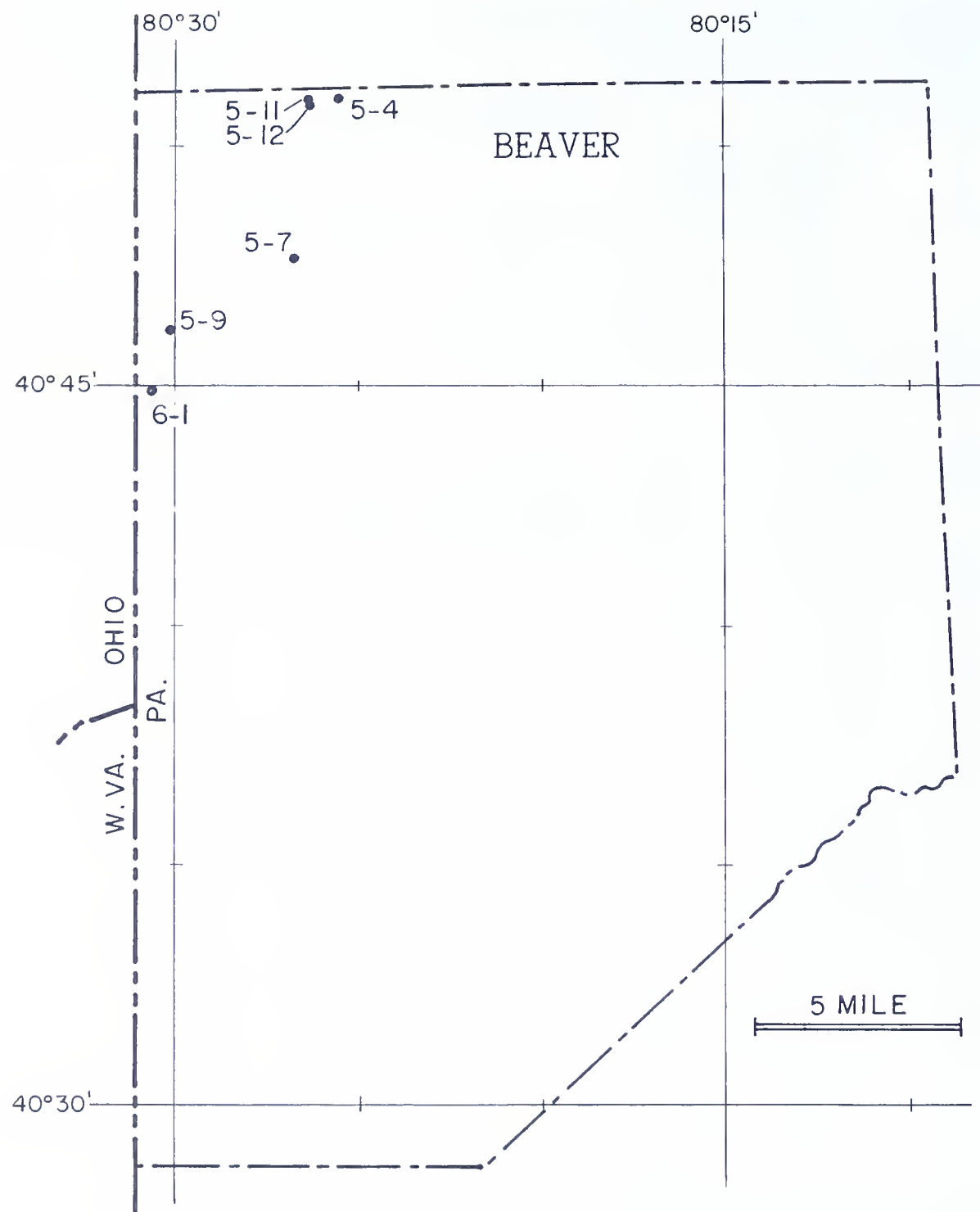


SITE/STATION NO.		46-2		LAT °N.		40°41'58"		COUNTY		Armstrong		WEATHERING		JOINTING						
COAL SAMPLE NO.(S)				46-C-4, -5, -6		LONG °W.		79°28'28"		TWP.		Burrell		COMMENTS Coal sampled and described a short distance to the west of the highwall description area.						
COMPANY				P. & L. Coal Co.		GEOLOGIST		rds		15' QUADRANGLE		Elders Ridge								
INE R. Brightmeyer		PERMIT		115-1C		DATE		7-23-68		7 1/2' QUADRANGLE		Whitesburg		Units 8 - 10 inaccessible.						
COAL(S) REPORTED				Upper Freeport (E)		and Upper Freeport rider.														
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL					PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE	THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"						
	44'																	Coals analyzed M/7-25-69		
0		cover																		
	8'+	Sh																		
	3' 0"	Ss																		
	18' 0"	Cl sh			G	5Y 3/2												Fissile; siderite nodules, c; black chips, r; conchoidal fracture; upper 1' clay-like; beds 1/4" - 1/2".		
	10' 0"	St sh			G	N3												Fissile; chippy; slickensides; beds 1/4" - 3".		
	0' 2"	Coal		0-2	S	N1	+				+	+	MD	0.8	26.7	37.3	35.2	4.02	9388	46-C-6, Upper Freeport rider coal. Non-banded?; lens-like.
a	0'-3"	Sh			S															Parting, irregular and lens-like.
3' 1"	Coal	1' 2"	23-37	S	N1	+					+		MB	0.8	39.1	51.5	8.6	3.54	13720	Bony streaks; hard.
	Coal	0' 7"	16-23		N1	+					+		VB	0.8	40.4	55.8	3.0	2.39	14712	
	Coal	0' 8"	8-16		N1	+					+		VB	0.4	39.7	55.3	4.7	2.61	14325	Knife-edge Fusain parting at top. Vitrain 1/8" - 1/4" thick in upper portion.
	Coal	0' 4"	4-8		N1	+					+		VB	1.0	32.6	44.2	22.2	2.78	11372	Hard.
	Coal	0' 4"	0-4		N1	+					+	+	VB	1.0	34.1	48.2	16.7	4.68	12316	
														0.7	38.2	52.0	9.0	3.16	13632	Seam average of 46-C-5, Upper Freeport (E) coal, upper bench
	0' 8"	Cl sh			S	N3														Silty; fissile; papery; branches, leaves, a; thin coaly laminae. Parting? of the Upper Freeport (E) coal; beds 1/32" - 1/8".
	0' 10"	Coal		0-10	S	N1	+				+		VB	1.0	32.5	49.2	17.2	2.76	12195	46-C-4, Upper Freeport (E) coal, lower bench.
		Cl sh			S	N1														Pyrite nodules, streaks, a; plt. frgs., a; slickensides

SITE/STATION NO.		55-1		LAT °N.		40°53'43"		COUNTY Armstrong & Indiana		WEATHERING fresh		JOINTING S70°E.										
COAL SAMPLE NO.(S)				LONG °W.		79°13'10"		TWP. Wayne & West Mahoning		COMMENTS *Survey identification: Possibly Upper Freeport (E)												
COMPANY		P. & N. Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Smicksburg												
MINE		Dayton		PERMIT		32-15		DATE		5-10-66		7 1/2' QUADRANGLE -										
COAL(S) REPORTED		Lower Freeport (D).																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S								
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE															
							THICK - NESS															
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"													
T	31'																					
6	0" - 1"	Coal				N1													"Dirty"; occurs as lenses along the east basal flank of Unit 5.			
5	15' 0"	Ss			S	N7													Beds 3" - 4'+ (to 8' in channel); rubbly; fine- to medium-grained, clay matrix, dark minerals. A channel filling (deposit) within Unit 4.			
4	25' 0"	St sh				N4													Beds 1/32" - 1/4"; mica l, c; plt. frgs, c.			
		St sh				5Y 4/1												Sandy; beds 1/32" - 1/4"; mica l, c; plt. frgs., c.				
		Cl sh				N3												Silty; beds 1/32" - 1/4"; mica l, c; plt. frgs., c.				
		Ss				5Y 4/1												Mica l, c; plt. frgs. c; medium-grained, clay matrix, basal clay chips. Unit 4: Appears to have a definite dip to the south (toward highwall). Nearby, Unit 4 reduces coal (Unit 2) to 1' 6". Possibly a channel or slump block, if so the axis is N-S.				
3	1' 4"	Sh			S	N1												Coaly; beds 1/32" - 1/4"; chippy; plt. frgs., a.				
2	3' 9"	Coal	1' 2"	31-45	S	N1							B						Blocky fracture; peacock stain; fairly persistent partings at top.			
		Coal	0' 8"	23-31	S	N1							B					Blocky fracture; peacock stain; fairly persistent partings at top.				
		Coal	0' 5"	18-23	S	N1							B					Blocky fracture; peacock stain; fairly persistent partings at top.				
		Coal	1' 6"	0-18	S	N1							B					Blocky fracture; peacock stain; fairly persistent partings at top. Unit 2: Lower Freeport (D) coal.				
1	1' 0"	Uc			S													Frag's. -1/2"; hackly; <u>Stigmara</u> , a.				

SITE/STATION NO. 55-5		LAT °N. 40°59'38"		COUNTY Armstrong	WEATHERING fresh	JOINTING
COAL SAMPLE NO.(S) 55-C-3		LONG °W. 79°14'30"		TWP. Redbank	COMMENTS 40' highwall almost completely covered and	
COMPANY Paul C. Harman Co., Inc.		GEOLOGIST adg	15' QUADRANGLE	Smicksburg	inaccessible. Workman said Middle Kittanning coal not	
MINE Harman #7 PERMIT 322-6		DATE 6-12-68	7 1/2' QUADRANGLE	-	mined on this hill and is thin to absent.	
COAL(S) REPORTED Lower Kittanning (B).						

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
																		Coals analyzed M/7-25-69			
	21'																				
	18'+	Cl sh				N4												Silty; subfissile; hackly, rubbly; siderite; plt. frgs. and branches.			
	2' 5"	Coal	0' 4 1/2"	24 1/2-29	S													Very bony; not sampled.			
		Coal	0' 9 1/2"	15-24 1/2				+		+	MD	0.7	38.2	50.2	10.9	2.82		13405	Bony.		
		Coal	1' 3"	0-15				+		+	MB	1.0	38.1	54.5	6.4	3.32		13986	Knife-edge parting at top.		
												0.9	38.1	52.8	8.2	3.13		13761	Seam average of <u>55-C-3</u> , Lower Kittanning (B) coal.		



TE/STATION NO.	5-4	LAT °N.	40°50'54"	COUNTY	Beaver	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	80°25'32"	TWP	Darlington	COMMENTS	U.S.G.S. Bulletin 1143-A (Patterson) indicated coals to be Lower Kittanning (B) and Middle Kittanning (C), as is also indicated in Pennsylvania Geologic Survey Atlas A5.		
COMPANY	Dodds Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	New Castle				
LINE	Ferguson	PERMIT	6-4	DATE	5-23-66	7 1/2' QUADRANGLE	New Galilee		
COAL(S) REPORTED	"No. 3" and "No. 4".								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
INTERVAL (TOTAL)	% ABUN - DANCE						ANTHRAXYLON THICK - NESS			ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH								
	> 60						30 - 60	15 - 30	0 - 15							> 1/4"					1/8" - 1/4"	1/32" - 1/8"	< 1/32"
66'		Sh				Dark												Inaccessible; possibly coal.					
6' 0"	Uc				S													Inaccessible; possibly Sh.					
25' 0"	Ss				S													Inaccessible; flat bedded 2' - 2'; slabby.					
3' 0"	St sh				S													Inaccessible; clayey; becomes sandy upward.					
1' 10"	Coal	1' 0"	10-22	S	N1													Shaly.					
	Coal	0' 10"	0-10	G	N1													Blocky. Unit 6: Middle Kittanning (C)? coal.					
5' 0"	Uc				S	N6 - N7												Silty; frag's. -1/2".					
6' 0"	lss st				G	N6												"Root-worked"; frag's. -1/2". Gradational between Units 3 - 5.					
17' 0"	lss st				G	N5 - N7												Beds 1/2" - 3"; slabby; silt to very fine-grained.					
	St sh				G	N4												Clayey; subfissile; beds 1/4" - 1/2"; hackly; siderite nodules, r; Lingula sp. 4' above coal, r.					
	Cl sh				G	N5												Subfissile; beds 1/4" - 1/2"; hackly; plt. frgs., leaves, c.					
2' 0"	Coal		0-24	S														Lower Kittanning (B)? coal.					
	Uc				S																		

SITE/STATION NO.		5-7 (page 1)		LAT °N.		40°47'40"		COUNTY		Beaver		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO(S)				LONG °W.		80°26'46"		TWP.		South Beaver		COMMENTS U.S.G.S. Bulletin 1143-B (Patterson) indicates coal to									
COMPANY		General Dynamics Corp.		GEOLOGIST		wee		15' QUADRANGLE		New Castle		be Lower Kittanning (B) and Middle Kittanning (C). Pa. Geologic									
MINE		Cain		PERMIT		336-2		DATE		5-23-66		7 1/2' QUADRANGLE		New Galilee		Survey Atlas A5 indicates coal to be Middle Kittanning (C) and					
COAL(S) REPORTED		Lower Kittanning (B)		and Middle Kittanning (C).								Upper Kittanning (C'). Uniform highwall.									
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
2	2' 6"	Coal	0' 2"	28-30	S	N1												Bony, shaly; discontinuous pyrite partings.			
		Coal	0' 8"	20-28	S	N1												Blocky; discontinuous pyrite partings.			
		Coal	0' 2"	18-20	G	N1												Blocky; persistent zone of fine pyrite partings, c.			
		Coal	1' 6"	0-18	S	N1												Splintery; discontinuous pyrite partings. Unit 2: Lower Kittanning (B)? coal.			
1	6' 0"	Uc	1' 0"		S	N5												Stigmara, a; slickensides.			
		Uc	5' 0"			N6												Silty; mica l, c; plt. frgs., <u>Stigmara</u> , a; slicken- sides; mined.			
	Note:																	See 1966 Sites: 5-4 (mine permit 6-4), and Sites 5-5 and 5-6 (mine permit 40-2A).			

SITE/STATION NO.		5-7 (page 2)		LAT °N.		40°47'40"		COUNTY		Beaver		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO(S)				LONG °W.		80°26'46"		TWP.		South Beaver		COMMENTS									
COMPANY				General Dynamics Corp.		GEOLOGIST		wee		15' QUADRANGLE		New Castle		U.S.G.S. Bulletin 1143-B (Patterson) indicates coal to be Lower Kittanning (B) and Middle Kittanning (C). Pa. Geologic Survey Atlas A5 indicates coal to be Middle Kittanning (C) and Upper Kittanning (C'). Uniform highwall.							
MINE				Cain		PERMIT		336-2		DATE		5-23-66		7 1/2' QUADRANGLE		New Galilee					
COAL(S) REPORTED																					
Lower Kittanning (B) and Middle Kittanning (C).																					
S T R A T I G R A P H I C D A T A																					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	PROXIMATE (%)							
							% ABUN - DANCE		THICK - NESS					MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
	42'																				
	2' 0"	Sh															Extremely weathered, almost a soil.				
	3" - 4"	Sh				N1											Beds 1/32" - 1/8"; chippy; contains coaly laminae.				
	0' 4"	Uc			S	N7											Non-silty; frag's. -1/2".				
	4' 0"	Cl sh			G	N2 - N3											Beds 1/8" - 1/4"; hackly; plt. frgs., leaves, c; weathers "lumpy".				
	1' 2"	Coal	0' 9 1/2"	4 1/2 - 14	S	N1						B					Irregular fracture.				
		Coal	0' 4 1/2"	0 - 4 1/2	G	N1											Shaly. Unit 7: Middle Kittanning (C)? coal.				
	3' - 4'	Uc	2' - 3'		S	N7											Frag's. -1/2"; <u>Stigmara</u> , a.				
		Uc	1' 0"		G	N3											Frag's. -1/2"; <u>Stigmara</u> , a. Unit 6: Partially covered.				
	18' 0"	Cl sh			G	N4 - N3											Slightly silty; beds 1/32" - 1/8"; chippy; siderite nodules to 7"; plt. frgs., leaves, r.				
		Cl sh			G	N3											Beds 1/32"-; chippy; siderite nodules and bands.				
	1" - 3"	Cl sh			S	N1											Slightly silty; beds -1/32"; papery; extremely friable; pyritized brachiopods (productid) samples; sulfate powder.				
	2' 2"	St sh			G	N2											Beds -1/32" - 1/8"; platy, flaggy; siderite nodules, r; <u>Lingula</u> sp., r (sampled); hard, brittle; color becomes N1 upward.				
	Note:																See 1966 Sites: 5-4 (mine permit 6-4), and Sites 5-5 and 5-6 (mine permit 40-2A).				

SITE/STATION NO.	5-9	LAT °N.	40°46'02"	COUNTY	Beaver	WEATHERING	slight	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	80°30'05"	TWP	South Beaver	COMMENTS	Primarily a clay mine. Uniform highwall. U.S.G.S.		
COMPANY	General Dynamics Corp.	GEOLOGIST	wee	15' QUADRANGLE	Columbiana	Bulletin 1143-A (Patterson) indicated coals to be Lower Kittanning			
MINE	Elsman	PERMIT	336-1	DATE	7 1/2' QUADRANGLE	East Palestine	(B) and Middle Kittanning (C). Possibly Middle Kittanning (C)		
COAL(S) REPORTED	Lower Kittanning (B).					and Upper Kittanning (C')			

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE													
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
T	44'																			
6	15' 0"	St sh	5' 0"			N5												Beds 1/8" - 1/4"; chippy; plt. frgs., c; very fine-grained Ss beds to 1", r.		
		Cl sh	7' 0"		G	N3 - N4												Silty upward; beds 1/8" - 1/4"; hackly; thin siderite bands; brittle.		
		St sh	0" - 2"		G	N1												Fissile; beds 1/32" - 1/8"; platy.		
		St sh	2' 0"		G	N4												Fissile; beds 1/8" - 1/4"; platy; mica l, c; siderite zones.		
		Cl sh	1' 0"		G	N4												Silty; fissile; beds 1/8" - 1/4"; hackly; siderite zones		
5	1' 6"	Coal	0' 3"	15-18	S	N1							B					Thin partings, c.		
		Coal	0' 9"	6-15	G	N1								B				Cubic fracture.		
		Coal	0' 6"	0-6	S	N1								D				Shaly. Unit 5: Upper Kittanning (C')? coal.		
4	5' 0"	Uc	1' 0"		S	N7												Frag's. -1/2".		
		Uc	4' 0"		G	N5												Shaly; frag's. -1/2".		
3	15' 0"	Cl sh	5' 0"		G	N1													Fissile; beds 1/32" - 1/4"; hackly; siderite nodules in bands every 6" - 1'.	
		Cl sh	3' 0"		G	N1													Fissile; beds 1/32" - 1/4"; hackly; siderite nodules, r.	
		Cl sh	6' 0"		G	N1 - N2													Fissile; beds 1/8" - 1/4"; chippy; siderite nodules, r.	
		Cl sh	1' 0"		G	N2													Fissile; beds 1/32" - 1/8"; chippy; siderite nodules, r. Weathers to very fine chips; fine white secondary minerals on weathered surfaces.	
2	1' 8"	Coal	0' 2"	18-20	S	N1							B						Thin partings, c.	
		Coal	1' 0"	6-18	S	N1								MB					Slightly shaly and bony.	
		Coal	0' 6"	0-6	S	N1									MD					Blocky to irregular fracture; hard. Unit 2: Middle Kittanning (C)? coal.
1	6' 0"	Uc			S	N6													Slightly silty; frag's. -1/2"; upper 1' shaly. Mined.	

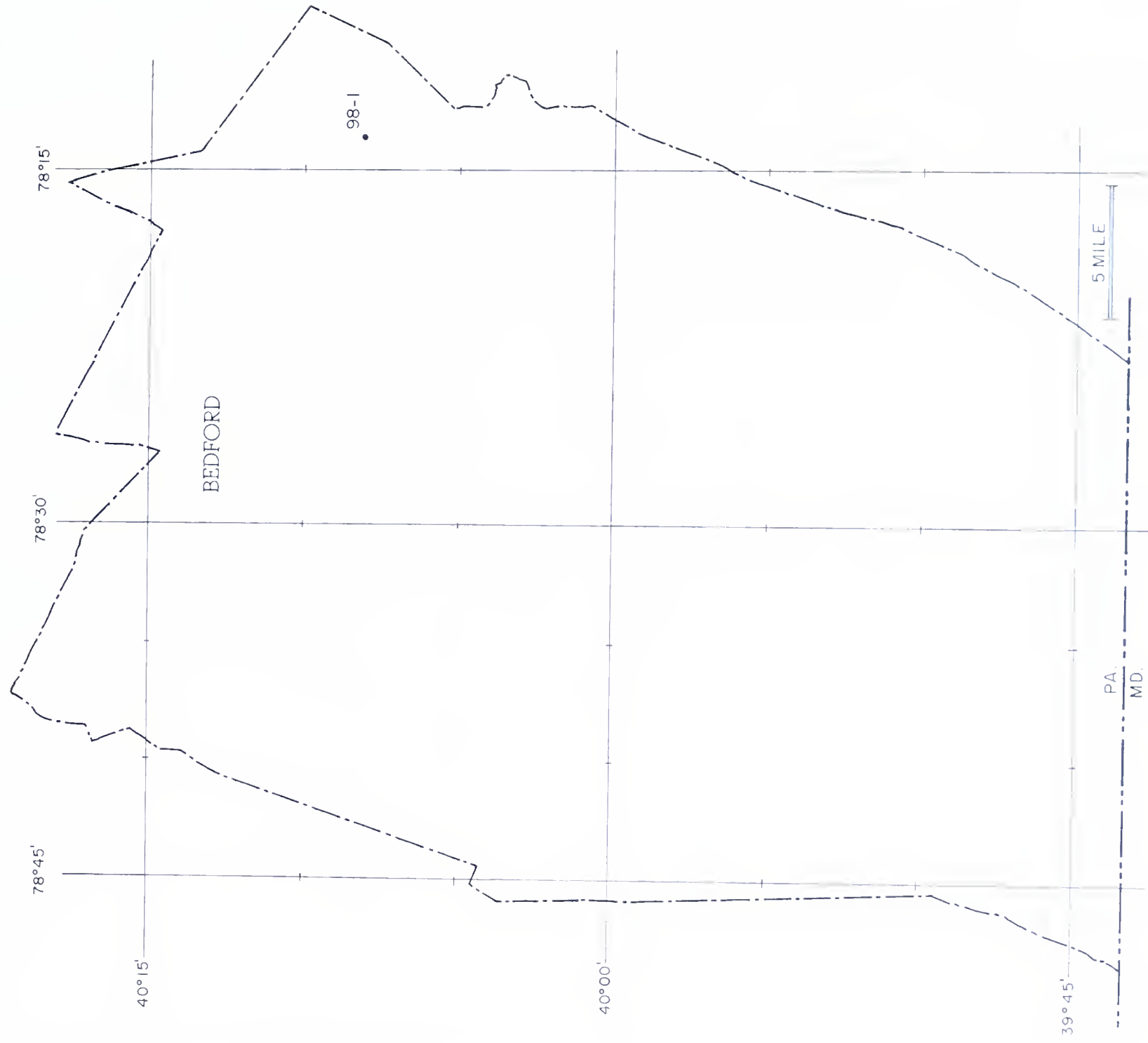
SITE/STATION NO.		5-11		LAT °N		40°50'55"		COUNTY		Beaver		WEATHERING		fresh		JOINTING						
COAL SAMPLE NO.(S)		5-C-6		LONG °W.		80°26'19"		TWP		Darlington		COMMENTS		See Site 5-12 for continuing stratigraphic column (Units 5 - 12), and total height.								
COMPANY Dodds Coal Co.				GEOLOGIST rds		15' QUADRANGLE		New Castle														
LINE Ferguson		PERMIT 6-4		DATE 8-15-68		7 1/2' QUADRANGLE		New Galilee														
COAL(S) REPORTED Lower Kittanning (B).																						
S T R A T I G R A P H I C										D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	CCAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH									
							% ABUN - DANCE	THICK - NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								

SITE/STATION NO. 5-12				LAT °N. 40°50'48"				COUNTY Beaver				WEATHERING fresh				JOINTING				
COAL SAMPLE NO.(S) 5-C-7				LONG °W. 80°26'17"				TWP. Darlington				COMMENTS See Site 5-11 for preceding stratigraphic column								
COMPANY Dodds Coal Company				GEOLOGIST rds				15' QUADRANGLE New Castle				(Units 1-4).								
MINE Ferguson		PERMIT 6-4		DATE 8-15-68		7½' QUADRANGLE New Galilee														
COAL(S) REPORTED Middle Kittanning (C) and Upper Kittanning (C').																				
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE	THICK - NESS												
														> 60	> 1/4"					
		30 - 60	1/8" - 1/4"																	
		15 - 30	1/32" - 1/8"																	
		0 - 15	< 1/32"																	
T	83' - 89'																			
12	12' - 15'	cover																		
11	15' 0"	Ss			G	N7											Mica 3, a; limonite-speck mottling.			
10	15' 0"	Sts			S	gn. bn.											Beds 1/2" - 3".			
9	0' 8"	Coal		0-8	S	N1											Not sampled or examined; thins laterally. Upper Kittanning (C') coal.			
8	16' 0"	Ss			S	N6											Fine-grained; good sorting; carbonaceous streaks, c.			
		Sts				N5										Carbonaceous streaks, a. Beds 3" - 1' in Sts and Ss				
		Cs				N3										Subfissile; splintery. Unit 8 interbedded, sub-unit intervals vary laterally along highwall.				
7	0' 2"	Cl sh			S												Carbonaceous; coaly streaks.			
6	2' 1/2"	Coal	0' 6	18 -																
			1/2"	24 1/2	S	N1	+			++ MD	1.3	29.2	41.2	28.4	0.89		9824	Bony in upper 2"; pyrite "flecks".		
		Coal	0' 10"	8 - 18	S	N1	+			++ VB	1.2	35.9	59.0	3.9	1.18		13962			
		Coal	0' 8"	0 - 8	S	N1	+			++ VB	1.8	34.8	60.2	3.2	1.04		13938	Hard; pyrite at bottom.		
											1.4	33.7	54.7	10.2	1.06		12856	Seam average of 5-C-7, Middle Kittanning (C) coal.		
5	6' - 8'	Uc			S	N3-N4											Semi-plastic; plt. frgs., a; carbonaceous; lower 2'-7' Cl sh.			
	Note:																Units 1 - 4 described at Site 5-11.			

TE/STATION NO. 6-1 (page 1)		LAT °N. 40°44'52"		COUNTY Beaver	WEATHERING fresh	JOINTING
COAL SAMPLE NO.(S)		LONG °W. 80°30'38"		TWP. South Beaver	COMMENTS Survey identification: Possibly Upper Freeport (E).	
COMPANY Sunnyside Coal Mining Co.		GEOLOGIST wee		15' QUADRANGLE Wellsville		
NE Bauder		PERMIT 48-3A		DATE 8-16-66 7 1/2' QUADRANGLE East Liverpool North		
COAL(S) REPORTED		"No. 6", or Lower Freeport (D).				

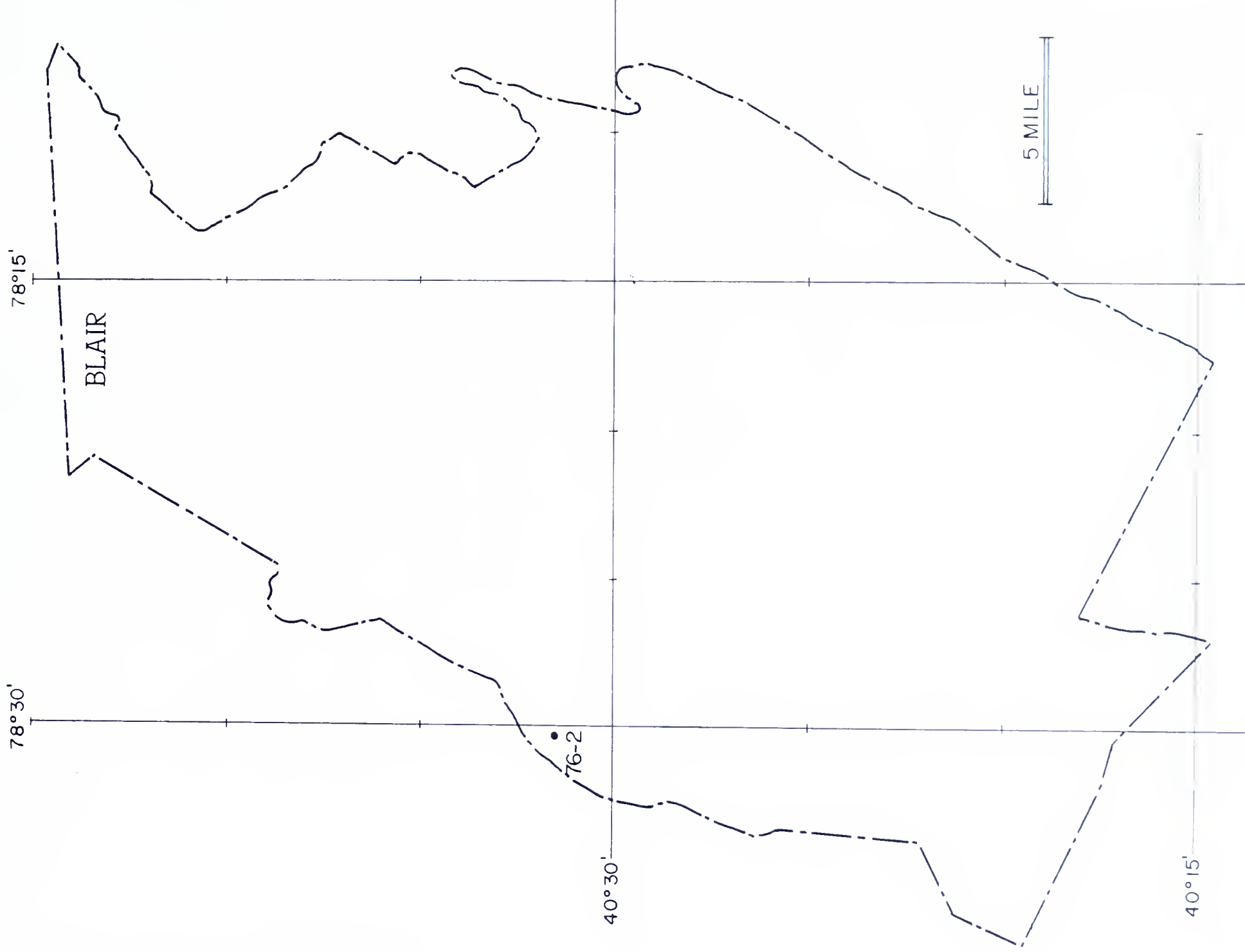
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES				C O M M E N T S	
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE									THICK - NESS				
						> 60	30 - 60	15 - 30	0 - 15										
10' - 25'	lss st	0' -		S	N3, N7													Fissile; beds $\frac{1}{4}$ " - 3"; chippy, slabby; plt. frgs., c.	
	lss sh	15'		L														Silty; fissile; beds $\frac{1}{4}$ " - $\frac{1}{2}$ "; chippy; plt. frgs., c.	
	Cl sh	1' 0"		G	N3													Fissile; beds $\frac{1}{2}$ " - 3"; slabby; mica 1 - 2, c; plt. frgs., leaves, a; silt to very fine-grained.	
	lss st	4' 0"		G	N3, N7													Fissile; beds $\frac{1}{2}$ " - 3"; slabby; mica 1 - 2, c; plt. frgs., leaves, a; silt to very fine-grained.	
	Cs & Cl sh	5' 0"		G	N5													Silty; fissile; beds $\frac{1}{4}$ " - 2"; slabby; plt. frgs., c.	
	Cs	0' 2"		S L	N3													Fissile; beds 1" - 2'; slabby. Unit 3: Upper contact is sharp east of channel, but laterally gradational west of channel.	
3' 0"	Coal	2' 5 $\frac{1}{2}$ "	6 $\frac{1}{2}$ -36	S	N1						B							Large blocky fracture.	
	Sh	0' $\frac{1}{2}$ "																Parting.	
	Coal	0' 6"	0-6		N1						B							Large blocky fracture. Unit 2: Uniform coal with parting scattered throughout. Lower Freeport (D)? coal.	
	Uc																	Only the top of this unit exposed.	

SITE/STATION NO. 6-1 (page 2)		LAT °N. 40°44'52"		COUNTY Beaver		WEATHERING fresh		JOINTING													
COAL SAMPLE NO.(S)		LONG °W. 80°30'38"		TWP. South Beaver		COMMENTS Survey identification; Possibly Upper Freeport (E)															
COMPANY Sunnyside Coal Mining Co.		GEOLOGIST wee		15' QUADRANGLE Wellsville																	
MINE Bauder		PERMIT 48-3A		DATE 8-16-66		7 1/2' QUADRANGLE East Liverpool															
COAL(S) REPORTED		"No. 6", or Lower Freeport (D).																			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	74'																				
8	20' 0"	St sh				5Y 6/4 5Y 5/6												Sandy; fissile; beds 1/4" - 1/2" (to 3", r); platy; plt. frgs., r.			
7	8' 6" - 9' 0"	Cl sh	0" - 6"		S	N2												Carbonaceous; fissile; beds 1/32" - 1/8"; chippy; plt. frgs., c.			
		Cs	2' 0"		G	10R 4/2 - N5											Silty; mottled; frag's. -1/2"; rootlets, <u>Stigmara</u> , c				
		Cs	3' 6"		G	N4 - N5											Silty; frag's. -1/2"; rootlets, c; upper few feet approaches a blocky semi-flint clay.				
		Cl sh	3' 0"		G	5Y 6/1											Silty; fissile; beds 1/8" - 1/4"; chippy; large siderite nodules at bottom; mica 1, c; ferruginous, "rotted" appearance.				
6B	30' 0"	Ss			S	N7 - N8												Fissile; beds 1" - 3' (mostly 1' - 2'); slabby; large scale cross-bedding dip N85°W; cross-beds dip mostly ENE; plt. frgs, r; very fine- to coarse-grained, clay matrix, clay chips. Silty zones, r. Basal zones, r. Basal clay-chip cgl. (chips to 6"); shal Ss lenses to 1', r. The western equivalent of Unit 6A.			
6A	10' 0"	Ss			L	N7												Fissile; beds 1/4" - 1" (to 1', r); chippy, slabby; mic 1 - 2, c; very fine-grained, clay matrix. The eastern equivalent of Unit 6B.			
5	7' 0"	Uc			U	5GY 7/1												Silty; frag's. 1/2"; hackly; rootlets, c; upper 1' a shale, N1, seen only at west side of channel.			
4	3' - 30'	Ss			G	N6												Fissile; flat beds 2' - 6'; small cross-bedding; plt. frgs, c; fine- to medium-grained, clay matrix, dark minerals. Silty laminae zones, r.			



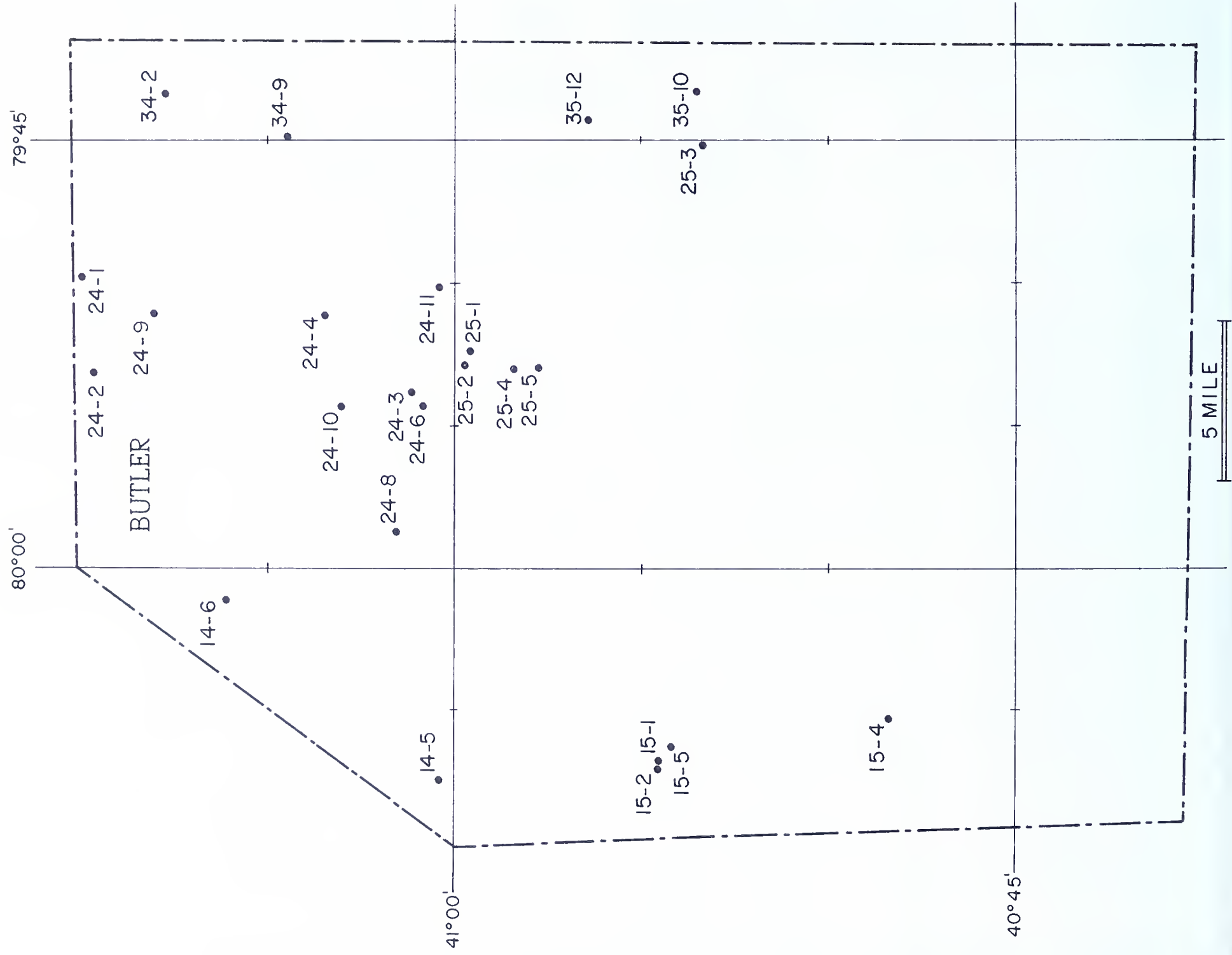
SITE/STATION NO	98-1	LAT °N.	40°08'06"	COUNTY	Bedford	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	98-C-1	LONG °W.	78°13'37"	TWP.	Broad Top	COMMENTS	Sedimentary and structural complications elsewhere		
COMPANY	P.B.S. Coals, Inc.	GEOLOGIST	tmb	15' QUADRANGLE	Broad Top	in highwall; Angular relationship between coal			
MINE	Parsons strip	PERMIT	222-8	DATE	6-9-66	7 1/2' QUADRANGLE	Saxton	(unit 2) and overlying strata, which are involved	
COAL(S) REPORTED	"Big Pittsburgh"					in a tight syncline.			

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE	THICK - NESS												
														> 60 30 - 60 15 - 30 0 - 15	> 1/4" 1/8" - 1/4" 1/32" - 1/8" < 1/32"					
T	39'																			
5	30'+	Ss & Sts				N6												Unit 5: Grades upward to Ss, beds 1' - 4' (tabular).		
4	3'+	Cl sh			G	N4												Silty; fissile; beds 1/8" - 3"; platy, chippy, slabby; silt laminae, r.		
3	1' 0"	Cl sh			G	10YR 4/2												Subfissile; beds 1/2" - 3". Vertical gradation from coal to black Sh to Cl sh.		
2	3' 4"	Coal	1' 8"	20-40		N1	+				+	+	MB	0.7	16.8	67.9	14.6	2.29	12690	Cubic, smooth fracture.
		Coal	0' 10"	10-20		N1	+					+	MD	0.7	13.8	58.3	27.2	1.60	10790	Smooth fracture.
		Cl	0' 2"																	Parting.
		Coal	0' 8"	0-8	S	N1	+				+	+		B	0.7 0.7	14.7 15.6	69.9 65.8	14.7 18.0	3.39 2.34	13010 12257
1	1' 6"+	Uc			S	5Y 2/1														Frag's. 1/2"+; hackly, rubbly; rootlets, r; thin coal stringers, r.



SITE/STATION NO.		76-2 (page 1)		LAT °N.		40°31'29"		COUNTY		Blair		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
COAL SAMPLE NO.(S)				LONG °W.		78°30'22"		TWP.		Logan		COMMENTS Units 5 - 8 locally cut out by unit 9 (Ss).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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SITE/STATION NO.		76-2 (page 2)		LAT °N.		40°31'29"		COUNTY		Blair		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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						60	30 - 60	30	15 - 30	15	0 - 15											1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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SITE/STATION NO.		14-5		LAT °N.		41°00'26"		COUNTY		Butler		WEATHERING		JOINTING											
COAL SAMPLE NO(S)		14-C-2		LONG °W.		80°07'34"		TWP		Worth		COMMENTS				Facies change from 3a to 3b is from west to east.									
COMPANY		Theodore DeMarsh Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Mercer															
LINE		DeMarsh # 13		PERMIT		62-6		DATE		8-2-67		7 1/2' QUADRANGLE		Harlansburg											
COAL(S) REPORTED		Middle Kittanning (C).																							
S T R A T I G R A P H I C														D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL					PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS							
INTERVAL (TOTAL)	ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH														
	% ABUN - DANCE																								
	> 60											30 - 60	15 - 30	0 - 15	THICK - NESS										
	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																					
16' - 34'																		Coals analyzed M/7-7-69							
12' - 15'		lsc sh				5Y 6/1												Fissile; beds 1/4" - 1/2"; chippy; mica 2, c; plt. frgs., c, upward.							
0" - 4"		Coal			S	N1												Not sampled or examined.							
		Ss				10YR 6/6												Very irregular beds 1/2" - 1'; branches, trunks, c; good sorting, angular, clay matrix, dark minerals, c; clay galls, c; coaly stringers to 6", r.							
0' - 10'		lss st				5GY 7/1												Branches, twigs, c. Unit 3b: Grades upward, as shown.							
10' - 14'		Cl sh			G	N3												Subfissile; beds 1/4" - 1/2"; chippy, hackly; N4, upward.							
3' 6"		Coal	0' 6"	36-42	S	N1			+		+	MD	3.3	37.9	47.6	11.2	1.56	11808	Bony.						
		Coal	0' 8"	28-36		N1		+			+	+	MD	3.4	33.8	49.0	13.8	0.54	11372	Cubic to rough fracture.					
		Coal	0' 3"	25-28		N1			+				VD	3.7	32.2	29.5	34.6	0.37	7936	Bony; 1/2" Cl sh parting at bottom (included in 3").					
		Coal	1' 7"	6-25		N1		+				+	MB	3.1	34.6	57.6	4.7	0.63	13138	Cubic to rough fracture.					
													MD												
		Coal	0' 6"	0-6		N1		+			+	D	3.6	31.5	59.0	5.9	0.96	12608	Fusain partings, r.						
													3.3	34.3	52.7	9.7	0.77	12164	Seam average of 14-C-2, Middle Kittanning (C) coal.						
1' 0"		Uc			S	5Y 5/1													Frag's. 1/2"±; hackly, rubbly; rootlets, c.						

SITE/STATION NO.		14-6		LAT °N.		41°06'13"		COUNTY		Butler		WEATHERING		moderate		JOINTING					
COAL SAMPLE NO.(S)		14-C-3		LONG °W.		80°01'06"		TWP.		Mercer		COMMENTS									
COMPANY		Theo. DeMarsh		GEOLOGIST		tmb		15' QUADRANGLE		Mercer											
MINE DeMarsh #14		PERMIT 62-7		DATE 8-1-67		7 1/2' QUADRANGLE		Slippery Rock													
COAL(S) REPORTED				Middle Kittanning (C).																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	20'																				
4	4' 0"	C1 sh				5Y 5/4												Silty; subfissile; beds 1/4"-1/2"; chippy; plt. frgs., c; extremely weathered.			
3	12' 0"	lss sh			G	N4												Fissile; beds 1/4"-1/2"; platy; mica 2, c; plt. frgs., leaves, a.			
2	4' 0"	Coal	0' 3"	45-48	S	N1		+			+	D	3.6	39.5	24.1	32.8	0.46	8333			
		Coal	1' 1"	32-45		N1			+			VD	2.9	38.4	53.0	5.7	0.98	13042	Cubic fracture; 1/2" bony layer at bottom (included in 1' 1").		
		Coal	1' 5"	15-32		N1		+			+	MD	4.6	32.5	55.7	7.2	0.71	12460	Cubic to rough fracture; fusain to 1/4", r - c.		
		Coal	1' 3"	0-15		N1		+			+	D	4.2	32.2	58.7	4.9	0.73	12582	Cubic to rough fracture; fusain to 1/4", r - c.		
													4.0	34.4	53.9	7.7	0.77	12398	Seam average of 14-C-3, Middle Kittanning (C) coal.		
1		Uc			S	N7												Unit 2: Wet and extremely weathered. Semi-plastic; frag's. -1/2"; hackly; rootlets, c.			

SITE/STATION NO. 15-1		LAT °N. 40°54'37"		COUNTY Butler		WEATHERING fresh		JOINTING N85°W, N50°E.	
COAL SAMPLE NO.(S)		LONG °W. 80°06'47"		TWP. Muddy Creek		COMMENTS Laterally uniform highwall.			
COMPANY Western Hickory Coal Co.		GEOLOGIST wee		15' QUADRANGLE Zelienople					
MINE Garner		PERMIT 152-4C		DATE 5-24-66		7 1/2' QUADRANGLE Prospect			
COAL(S) REPORTED		Lower Freeport (D).							

S T R A T I G R A P H I C													D A T A					C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S
NUMBER	GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
							A N T H R A X Y L O N						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH	
							% ABUN - DANCE			THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"											1/32" - 1/8"
1	25'																						
7	4' 0"	Cl sh				5Y 5/6													Beds 1/4" - 1/2"; slabby; weathered.				
6	0' 4"	Ss - Sts			G														Clayey and sandy Sts; beds 1/2" - 3"; rubbly; plt. frgs. leaves, c; clay matrix, a; carbonaceous and limonitic.				
5	2' 0"	Sts - Ss			G	5Y 8/1													Clayey; beds 1/2" - 3"; "lumpy"; <u>Stigmara</u> , c; silt to very fine-grained, clay matrix, c.				
4	6" - 1'	Uc - Cs			G	N5 - N6													Silty; weathered "lumpy" Cs; beds 1/2" - 3"; rubbly; plt. frgs., <u>Stigmara</u> , c.				
3	16' 0"	Sts	4' 0"		G	5Y 6/1 - 5Y 6/4													Beds 1/2" - 1"; flaggy; mica l, c; plt. frgs., leaves, c.				
		Sts - St sh	4' 0"		G	N3													Beds 1/2" - 1"; flaggy; mica l, c; plt. frgs., leaves, c.				
		Sts	4' 0"		G	N1 - N2													Beds 1/2" - 1"; flaggy; mica l, c; plt. frgs., leaves, c. carbonaceous laminae, c.				
		Sts	4' 0"		G	N2													Beds 1/2" - 1"; flaggy; mica l, c; plt. frgs., leaves, c. Very fine-grained Ss laminae, N7, r.				
2	1' 9"	Coal	0' 2"	19-21	S	N1													Shaly.				
		Coal	1' 7"	0-19	G	N1								B-MD					Impersistent partings, c. Unit 2: Lower Freeport (D) coal.				
		Uc			S	N7																	

SITE/STATION NO.		15-2 (page 1)		LAT °N.		40°54'38"		COUNTY		Butler		WEATHERING		fresh		JOINTING		N40°E, N70°W.									
COAL SAMPLE NO.(S)				LONG °W.				80°07'05"				TWP.				Muddy Creek				COMMENTS				Units 5 - 10, channel filling, with axis N45°E.			
COMPANY				Western Hickory Coal Co.				GEOLOGIST		wee		15' QUADRANGLE		Zelienople													
MINE		Garner		PERMIT		152-4C		DATE		5-24-66		7 1/2' QUADRANGLE		Prospect				Unit 5 unconformable with Units 3 - 4.									
COAL(S) REPORTED				Middle Kittanning (C).																							

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)						
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH			SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							% ABUN - DANCE	THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"						
		Coal	0' 9 1/2"	23 1/2 - 33	S	N1									D - MD				Fine pyrite partings, c.	
		Bone	0' 1 1/2"		S	N1													Parting; persistent; possibly Sh.	
		Coal	0' 10"	13 - 23	S	N1									MB				Several discontinuous fusain-pyrite partings.	
		Coal	0' 9 1/4"	3 3/4 - 13		N1									MB					
		Fusain Pyrite	0' 1/4"		S	N1													Parting; persistent.	
2	2' 9"	Coal	0' 3 1/2"	0 - 3 1/2	S	N1									B				Irregular fracture. Unit 2: Middle Kittanning (C) coal. Coal is augered.	
1	0' 8"	Uc			S	N4													Silty; frag's. - 1/2"; <u>Stigmara</u> , a.	

SITE/STATION NO.		15-2 (page 2)		LAT °N.		40°54'38"		COUNTY		Butler		WEATHERING		fresh		JOINTING		N40°E, N70°W.			
COAL SAMPLE NO(S)				LONG °W.		80°07'05"		TWP.		Muddy Creek		COMMENTS		Units 5 - 10 channel filling, with axis N45°E.							
COMPANY		Western Hickory Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Zelienople											
LINE		Garner		PERMIT		152-4C		DATE		5-24-66		7 1/2' QUADRANGLE		Prospect		Unit 5 unconformable with Units 3 - 4.					
COAL(S) REPORTED		Middle Kittanning (C).																			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
							ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
	47'																				
	5' 0"	Uc Cl sh	2' 6" 2' 6"		G	N7 N2													Non-silty; frag's. - 1/2". Silty; beds 1/32" - 1/8"; hackly.		
	2' - 17'	Uc			G	N5 - N6													Clayey and micritic Ls nodules and boulders to 4' are interbedded and reticulated with the Uc. In the lower 2' - 3' Ls is interbedded with silty Cl sh, N3, hackly.		
	2" - 8"	Coal Cl sh			S L	N1 N1					MD								Blocky fracture. Beds - 1/32" - 1/8"; hackly; plt. frgs., leaves, a. Unit 8: Cl sh in center of channel grades laterally to coal on the flanks.		
	1' - 10'	St sh Sts			S	N1													Beds 1/2" - 3"; slabby; mica 1 - 2, a; plt. frgs., leaves, a; carbonaceous; fine coaly laminae, c.		
	2" - 1'	Coal			S	N1					MB								Blocky; fine partings, c.		
	1' - 8'	St sh Sts			S	N5													Beds 1/8" - 3"; hackly, rubbly; mica 1, c; plt. frgs., leaves, c.		
	11' 0"	Ss St sh	6' 0" 5' 0"		U G	 5Y 4/1 5GY 6/1													Clayey; orange-yellow stain; beds 1" - 2"; slabby; mica 1 - 2, c; plt. frgs., leaves, c; very fine- to fine-grained, clay matrix, a. Clayey. May be similar to Unit 3, but altered by ground water?		
	32' 6"	Sts - St sh Cl sh Cl sh	27' 6" 4' 0" 1' 0"		? G G	N5 N3 - N4 N2													Beds 1/4" - 3"; platy, equant; siderite nodules in lower few feet, r; plt. frgs., leaves, a. Silty; beds 1/8" - 1/4"; hackly. Beds 1/4" - 1/2"; chippy; siderite nodules; brachiopods and possibly pelecypods at 1' from bottom.		

SITE NO. 15-4

SITE/STATION NO.		15-5		LAT °N.		40°54'15"		COUNTY		Butler		WEATHERING		fresh		JOINTING			
COAL SAMPLE NO.(S)		15-C-3		LONG °W.		80°06'18"		TWP.		Muddy Creek		COMMENTS						Units 6 & 7 inaccessible.	
COMPANY				Western Hickory Coal Co.				GEOLOGIST		rds		15' QUADRANGLE		Zelienople					
LINE		Garner		PERMIT		152-5		DATE		8-12-68		7 1/2' QUADRANGLE		Prospect					
COAL(S) REPORTED				Middle Kittanning (C)															

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
							ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
	28'																		Coals analyzed M/7-25-69		
	8' 0"	cover				Buff															
	0' 8"	Sts			G	Dark															
	5' 0"	Sts			S	5Y 4/2													Subfissile; slabby.		
2' - 10'	Ss	0' 10"			G														Rootlets in lower portion,c; plt. frgs. in upper portion, a; fine-grained in upper portion.		
	lss sh	2' 0"			G																
10' 0"	Ss				G	N6													Fine-grained; thin bedded.		
	St sh				G														Sandy.		
	Cl sh				G	N2													Silty; mica l, c; fossil fern collected.		
	Cl				G	N2															
2' 1/2"	Coal	0' 2"	22 1/2-24 1/2			N1													Bony, also contains St sh; not sampled.		
	Coal	0' 5 1/2"	17-22 1/2			N1	+				+	MD	1.6	38.3	55.5	4.7	2.03	13889	Knife-edge pyrite streaks; peacock luster.		
	Coal	1' 5"	0-17			N1	+				+	MB	1.5	36.3	53.7	8.5	1.79	13308	A discontinuous clay-fusain parting at top.		
													1.5	36.8	54.1	7.5	1.85	13450	Seam average of 15-C-3, Middle Kittanning (C) coal.		
		Uc			S	N2													Plastic to semi-plastic; slickensides, a.		

SITE/STATION NO.		24-1		LAT °N.		41°09'59"		COUNTY		Butler		WEATHERING		JOINTING									
COAL SAMPLE NO.(S)		24-C-1		LONG °W.		79°49'59"		TWP.		Venango		COMMENTS				Name of Mine; DeMarch #9 - Wheeling							
COMPANY				T. DeMarch Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Hilliards									
MINE		See comments		PERMIT		62-4		DATE		8-9-66		7 1/2' QUADRANGLE		Eau Claire									
COAL(S) REPORTED				Middle Kittanning (C).																			
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
T	40'																						
3	20' 0"	Ss																	Beds 3" - 2'; mica, r; fine-grained; clay matrix and dark minerals, r.				
2	17' 0"	Cl sh			U	N5													Beds 1/4" - 3"; hackly; siderite.				
1	2' 9"	Coal	1' 1"	20-33	S	N1			+		+	D	2.1	31.8	62.0	4.2	1.19		13620	Bone.			
		Sh	0' 1 1/2"			N1														Parting.			
		Coal	0' 4 1/2"	15-19 1/2		N1		+			+	MD	2.1	32.5	60.3	5.1	0.98		13490				
		Sh	0' 1 1/2"			N1														Parting.			
		Coal	0' 3 1/2"	11-14 1/2		N1		+	+		+	MD	1.6	34.0	59.1	5.4	1.82		13660				
		Sh	0' 1 1/2"																	Parting.			
		Coal	0' 10 1/2"	0-10 1/2		N1		+	+		+	MD	2.1 2.0	32.0 32.2	61.5 61.3	4.5 4.6	1.26 1.25		13740 13646	Seam average of 24-C-1, Middle Kittanning (C) coal.			

ITE/STATION NO.	24-2	LAT °N.	41°09'45"	COUNTY	Butler	WEATHERING	JOINTING
COAL SAMPLE NO.(S)	24-C-2	LONG °W.	79°53'10"	TWP.	Marion	COMMENTS	Units 4 - 5 inaccessible.
COMPANY	TASA Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Hilliards		
LINE	Butler #3 strip	PERMIT	49-3C	DATE	8-10-66	7 1/2' QUADRANGLE	Barkeyville
COAL(S) REPORTED	Brookville.						

S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES					C O M M E N T S		
GROSS UNIT	L I T H O L O G Y	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
						% ABUN - DANCE				THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
28'																					
	cover																	Soil.			
	cover																	Undifferentiated, but contains Vanport Ls.			
1' 0"	Coal		0-12		N1													Clarion ? coal.			
2' 0"	Uc			S																	
22' 0"	Ss			G	N6													Beds 3" - 1'; cross-beds; mica, r; very fine-grained; clay matrix, a; dark minerals, r.			
3' 0"	Coal	1' 6"	18-36	S	N1		+	+		+			MD	1.7	33.0	58.7	6.6	3.41	13250	Sh partings; pyrite.	
	Sh	0' 1"			N1															Tough.	
	Coal	0' 8 1/2"	8 1/2-17		N1		+	+		+			MD	1.7	35.5	58.2	4.6	2.35	13970		
	Sh	0' 1 1/2"			N1															Soft.	
	Coal	0' 8"	0-8	S	N1		+	+		+			MD	1.8 1.7	31.9 33.4	58.5 58.5	7.8 6.4	3.46 3.16	13240 12425	Thin Sh partings. Seam average of <u>24-C-2</u> , Brookville coal.	

SITE/STATION NO. 24-3			LAT °N. 41°01'08"			COUNTY Butler			WEATHERING			JOINTING									
COAL SAMPLE NO.(S) 24-C-3			LONG °W. 79°53'53"			TWP. Clay			COMMENTS												
COMPANY Sunbeam Coal Corp.			GEOLOGIST adg			15' QUADRANGLE Hilliards															
MINE Kuzuma strip			PERMIT 179-4A			DATE 7-12-66			7 1/2' QUADRANGLE West Sunbury												
COAL(S) REPORTED			Upper Kittanning (C').																		
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	46' - 51'																				
10	2' +	Ss																			
9		Coal				N1												Blossom.			
8	8' 0"	cover																Covered interval.			
7	1' 0"	Coal		0-12		N1												Blossom.			
6	7' 0"	Uc			S	N5												Solid; contains fresh-water Ls nodules; conchostraca.			
5	0' - 5'	Ss			G	N6												Beds 3" - 1'; fine- to medium-grained, clay matrix, upper contact locally unconformable.			
4	12' 0"	Cl sh			S	5Y 4/1												Beds 1/8" - 1/2"; leaves, a.			
3	13' 0"	Cl sh			L	N5												Beds 1/8" - 1/2"; siderite bands; leaves, a; conchostraca.			
2	5' 0"	Coal	1' 11"	37-60	S	N1		+		+		D	1.5	32.9	57.5	8.1	2.86	13290	Pyrite.		
		Cl	0' 11"															Parting.			
		Coal	2' 2"	0-26		N1		+		++ +		D	1.6 1.6	29.6 31.1	56.9 57.2	11.8 10.1	3.32 3.10	12380 12807	Pyrite. Seam average of 24-C-3, Upper Kittanning (C') coal.		
1		Uc																			

TE/STATION NO.		24-4		LAT °N.		41°03'29"		COUNTY		Butler		WEATHERING		JOINTING	
AL SAMPLE NO.(S)		24-C-4		LONG °W.		79°51'10"		TWP.		Washington		COMMENTS			
MPANY		Hilliards Mining Co.		GEOLOGIST		adg		15' QUADRANGLE		Hilliards					
NE Bengile		PERMIT 197-1 & 1A		DATE		7-12-66		7 1/2' QUADRANGLE		Hilliards					
AL(S) REPORTED														Upper Freeport (E)?	
SYNTHETIC DATA															
COAL CHEMICAL ANALYSES															
COMMENTS															
COAL PROXIMATE (%)															
COAL CHEMICAL ANALYSES															
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SITE/STATION NO.		24-6		LAT °N.		41°00'48"		COUNTY		Butler		WEATHERING		fresh		JOINTING				
COAL SAMPLE NO(S)				LONG °W.				79°54'22"				TWP.		Clay		COMMENTS				
COMPANY				Tri-County Fuel Co.				GEOLOGIST		wee		15' QUADRANGLE		Hilliards		Probably Upper Kittanning (C'), based on unpublished Butler county report.				
MINE		Tri-County #10		PERMIT		13-6C		DATE		5-18-66		7 1/2' QUADRANGLE		West Sunbury						
COAL(S) REPORTED				Upper Kittanning (C') or Lower Freeport (D).																
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"								
T	61'																			
12	?	Uc				N8											Plastic; clay blossom.			
11	18' 0"	Ss	12' 0"		G	Tan											Beds 1/2" - 3" (to 1', r); equant; cross-bedding; fine to medium-grained, clay matrix, dark minerals, r.			
		Ss	6' 0"		G	N7											Beds 3" - 1'; mica l, c; silt to fine-grained, clay matrix, dark minerals, r; Fe-stain.			
10	6' 6" - 7' 0"	Cs	4 1/2' - 5'		U	5Y 4/1											Silty; beds 3" - 1'; slabby; mica l, c; <u>Stigmara</u> , c; carbonaceous; "lumpy".			
		Sts	2' 0"		G	5Y 6/1											Beds 3" - 1'; slabby.			
9	0' 1"	Sts			S	N1											Coaly; thin vitrain bands, c.			
8	6' 6" - 7' 0"	Sts			S	N6											Beds 1/2" - 3"; slabby; upper 2' - 3' clayey and "lumpy" (by root action?); interbedded clayey Sts, 5GY 8/1, r.			
7	1' 8"	Ss			S	N5 - N6											Two 9" beds; mica l, c; very fine-grained, clay matr			
6	23' 0"	Cl sh			S	N2											Beds 1/4" - 1"; leaves in lower 7', c; leaves in upper 16' c - r; very uniform unit.			
5	0" - 2"	Cs			S	N1											Silty; solid; hard; vitrain stringers.			
4	1' 8" - 1' 10"	Coal		0-22	S	N1						B					Blocky fracture; partings, r; local short pyrite band to 1". Upper Kittanning (C') ? coal.			
3	1' 3" - 1' 8"	Uc			S	N1 - N2											Silty; frag's. + 1/2", "lumpy"; plt. frgs., leaves, <u>Stigmara</u> , a; a weathered Cs.			
2	2' 1" - 2' 3"	Coal		0-27	S	N1						B					Blocky fracture; several discontinuous pyrite and pyrite-fusain partings to 1/4". Upper Kittanning (C') coal.			
1		Uc			S	N7														

TE/STATION NO.	24-8	LAT °N.	41°01'30"	COUNTY	Butler	WEATHERING	JOINTING
AL SAMPLE NO.(S)	24-C-6	LONG °W.	79°58'46"	TWP.	Clay	COMMENTS	
COMPANY	Allison Engineering Co.	GEOLOGIST	tmb	15' QUADRANGLE	Hilliards		
NE John Broad strip	PERMIT 39-4	DATE	8-1-67	7 1/2' QUADRANGLE	West Sunbury		
AL(S) REPORTED	Middle Kittanning (C).						

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE				THICK - NESS										
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
38'																		Coals analyzed M/7-7-69		
	lss sh				N2 - N3													Fissile; beds 1/8" - 1/4"; platy; mica 1, a.		
24' 6"	Sts	6' 0"		G	N3													Frag's. +1/2"; mica 1, a; rootlets, c.		
	Sts	10' 0"		G	N2 - N3													Subfissile; beds 1/2" - 3"; slabby, rubbly; mica 2, a; plt. frgs., c.		
	Ss	3' 0"		G	N6													Beds 1/2" - 3"; rubbly; mica 3, a; leaves, plt. frgs., c; fine-grained, clay matrix; coaly fragments, r.		
	lss sh	5' 6"		G	N2													Coaly; fissile, subfissile; beds 1/4" - 1/2"; platy; chippy; mica 2, c; <u>Calamites</u> sp., c.		
9' 0"	Ss			S	N7													Beds 1/2" - 1'; slabby; large-scale cross-bedding bearing W & WSW; mica 3, a; plt. frgs., leaves, c; very fine-to fine-grained, excellent sorting, clay matrix, dark minerals, c.		
3' 1"	Coal	1' 0"	25-37	S	N1			+		+	+	D	2.2	34.7	52.4	10.7	3.97	12850	Cubic to rough fracture; knife-edge pyrite partings, r.	
	Coal	1' 4"	9-25		N1			+			+	D	1.7	40.9	51.8	5.6	2.53	13988	Rough fracture; knife-edge pyrite partings, r.	
	Coal	0' 9"	0-9		N1			+			+	MB	2.5	34.2	57.6	5.7	2.16	13528	Cubic to rough fracture; knife-edge pyrite partings, r.	
													2.1	37.3	53.4	7.3	2.91	13507	Seam average of <u>24-C-6</u> , Middle Kittanning (C) coal.	
2'+	Uc			S	N6														Frag's. -1/2"; rootlets, c.	

SITE/STATION NO.		24-9		LAT °N.		41°08'02"		COUNTY		Butler		WEATHERING		fresh		JOINTING						
COAL SAMPLE NO.(S)		24-C-7		LONG °W.		79°53'34"		TWP.		Marion		COMMENTS		Lateral change in thickness from ENE to WSW. Unit 2 - 7 channel filling.								
COMPANY Lucas Coal Co.				GEOLOGIST tmb		15' QUADRANGLE		Hilliards														
MINE Murrinsville		PERMIT 174-4		DATE 8-9-67		7 1/2' QUADRANGLE		Barkeyville														
COAL(S) REPORTED				Brookville and Scrubgrass (Upper Clarion) coal.																		
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
							% ABUN - DANCE			THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
T	40'																					
7	15' 0"	lss sh																				
6	4' 0"	Ls																				Vanport limestone.
5	0' 8"	Coal		0-8		N1																Survey identification: Scrubgrass (Upper Clarion) coal.
4	2' 6"	Uc																				Frag's. - 1/2".
3	15' 0"	lss sh				N6																Fissile; beds 1/2" - 3"; flaggy; mica 1 - 2, c; very fine-grained Ss laminae to 1" - 1 1/2" near top.
		Cl sh				N4																Fissile; chippy; mica 1 - 2, c; Neuropteris sp., c. Unit 3: Beds dip 30° ENE. Cl sh (ENE) changes laterally to lss sh (WSW).
2	3' 1"	Coal	0' 11"	26-37		N1									2.2	36.8	54.5	6.4	4.46			13358
		Coal	0' 10"	16-26		N1									2.0	34.2	54.8	9.0	3.96			13141
		Cl sh	0' 1"			N3																Parting.
		Coal	1' 3"	0-15		N1									2.0	36.6	54.4	7.1	3.28			13479
															2.0	36.0	54.6	7.4	3.83			13348
1		Uc				N4																Frag's. - 1/2"; rootlets, r.

SITE NO 24-10

SITE/STATION NO.		24-11		LAT °N.		41°00'21"		COUNTY		Butler		WEATHERING		slight		JOINTING						
COAL SAMPLE NO(S)		24-C-9		LONG °W.		79°50'11"		TWP.		Concord		COMMENTS										
COMPANY				Black Fox Mng. & Dev. Corp.				GEOLOGIST		adg		15' QUADRANGLE		Hilliards								
MINE				Cumberland-Wright				PERMIT		289-4		DATE		7-30-68		7 1/2' QUADRANGLE Hilliards						
COAL(S) REPORTED				Lower Freeport (D)?																		
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						A N T H R A X Y L O N						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE		T H I C K - N E S S													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T	21' - 24'																					
4	7'+	Ss				5Y 6/4													Fissile; blocky; fine-grained; clay matrix; limonite beds 1' - 2'.			
3	3' - 6'	Sts			U	5Y 6/2													Fissile; flaggy; beds 1/8" - 3".			
2	9' 0"	Cl sh			S	N3													Fissile; chippy; siderite bands, c; fresh water fossils collected; beds 1/8" - 1/4".			
1	1' 7"	Coal	0' 9"	10-19	S	N1	+			+	+	MD	1.4	36.7	54.7	7.2	3.78		13429			
		Fusain			S															Parting, knife-edge.		
		Coal	0' 4 1/4"	5 3/4 - 10	S	N1	+			+	+	MD	1.3	37.9	55.0	5.8	1.89		13696			
		Fusain	0' 1/4"		S															Parting.		
		Coal	0' 5 1/2"	0-5 1/2	S	N1	+			+	+	MB	1.5 1.4	37.4 37.2	55.7 55.1	5.4 6.4	2.26 2.91		13744 13582	Pyrite. Seam average of 24-C-9, Lower Freeport (D)? coal.		

[illegible]

SITE/STATION NO.		25-2		LAT °N.		40°59'44"		COUNTY		Butler		WEATHERING		moderate		JOINTING								
COAL SAMPLE NO.(S)		25-C-1		LONG °W.		79°52'29"		TWP.		Concord		COMMENTS						Listed as UF in unpublished Butler Co. report.						
COMPANY				T. B. Mathieson Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Butler										
MINE		Mathieson #2A		PERMIT		208-2		DATE		7-12-66		7 1/2' QUADRANGLE		East Butler		Units 4 - 5 thicken.								
COAL(S) REPORTED				Upper Freeport (E)? and Upper Freeport (E) rider ? coal.																				
S T R A T I G R A P H I C										D A T A					COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS					
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH			
							% ABUN - DANCE			THICK - NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"	
T	18' - 20'																							
9		cover																	Soil.					
8	2' 1"	Coal		0-25		N1													Sh partings. Weathered. Upper Freeport (E) rider?					
7	0" - 8"	Sh																	Coaly; subfissile; beds 1/32" - 1/8".					
6	0' 9"	Cl sh			S														Subfissile; beds 1/4" - 1/2".					
5	4' 0"	Ss			S	N7 - N8													Beds 3" - 1' (irregular); mica, r; medium- to coarse-grained; carbonaceous material, r.					
4	3' 8"	Ss			S	5G 6/1													Beds 1/2" - 3"; very fine-grained; clay matrix, r; dark minerals, r.					
3	5' 6"	Cl sh			S	N5													Stigmara; slickensides.					
2	1' 6"	Bone	0' 2"		S																			
		Coal	0' 9"	7-18		N1		+	+		+	+	D	1.8	26.9	53.1	18.2	7.96	11110	Pyrite.				
		Coal	0' 7"	0-7		N1			+			+	D	2.0	29.3	55.5	13.2	4.49	12130	Pyrite partings.				
																				Seam average of 25-C-1, Upper Freeport (E)? coal.				
1	0' 6"±	Cl sh			S	N5																		

SE/STATION NO.	25-3	LAT °N.	40°53'25"	COUNTY	Butler	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	79°45'07"	TWP.	Donegal	COMMENTS	Survey designation: Probably Upper Freeport (E)		
COMPANY	Tri-County Fuel Co.	GEOLOGIST	wee	15' QUADRANGLE	Butler		coal.		
VIEW	Keast	PERMIT	17-4C	DATE	5-19-66	7 1/2' QUADRANGLE	East Butler	Unit 6, channel filling, unconformable with Units 4 - 5.	
COAL(S) REPORTED	Upper Kittanning (C'), or Upper Freeport (E).						4 - 5.		

UNIT NUMBER	S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S					
	CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)								
							ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE		FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"									
INTERVAL (TOTAL)																						
7	23'																					
6	18' 0"	Ss				N8													Beds 2" - 6" (upper 8'), and 1' - 5' (lower 10'); channel deposit, with NW-SE axis; mica 1 - 2, c; plt. frgs., leaves, c; branches, r; very fine-to fine-grained, clay matrix, clay galls; Ss lenses pinch out against upper surface of coal (Unit 4). Two St sh lenses; clayey; N1;with plt. frgs. at 1" - 5' above bottom.			
5	18' 0"	St sh	14' 0"		U	N3													Hackly; beds 1/8" - 1/4"; plt. frgs, leaves, c at bottom, becoming r upward.			
		lsc st	4' 0"		G	N3 - N6													Beds 1/2" - 3"; flaggy. Unit 5: Locally cut out by Unit 6.			
4	2' 0"	Coal		0-24	S	N1						B							Blocky fracture; discontinuous fine pyrite and/or fusain partings in lower half, c; fewer similar partings in upper half. Upper Freeport (E)? coal.			
3	0' 7"	Cs			S	N1													Coaly; frag's. +1/2"; possibly an Uc; plt. frgs., leaves, a; hard; pyrite stringers.			
2	2' 3"	Coal	1' 8"	7-27	S	N1						B							Blocky fracture; discontinuous partings, r. Parting.			
		Pyrite & Fusain	0' 1"		G	N1																
		Coal	0' 6"	0-6	G	N1							VB							Unit 2: Upper Freeport (E)? coal.		
1		Uc			S																	

SITE/STATION NO.		25-4		LAT °N		40°58'26"		COUNTY		Butler		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		25-C-2		LONG °W.		79°53'04"		TWP		W. Sunbury		COMMENTS		Approximately 60' above Upper Freeport based on							
COMPANY		Mathieson Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Butler		Butler County report, possibly Mahoning coal.									
MINE		PERMIT		208-3		DATE		8-1-68		7 1/2' QUADRANGLE		Mt. Chestnut									
COAL(S) REPORTED		Upper Freeport (E)?																			
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	Coals analyzed M/7-25-69	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	31'																				
3	15'+	Cl sh				5GY 4/1												Subfissile; hackly; siderite nodules collected; beds 1/4" - 1/2".			
2	12' 0"	Cl sh			G	N4												Silty; subfissile; hackly; thin Sts bed 3" - 5" thick at 8' - 10' above coal; beds 1/4" - 1/2".			
1	4' 1 1/2"	Coal	0' 6"	43 1/2 - 49 1/2	S	N1		+		+		MD	0.8	42.0	46.4	10.9	2.94	13060			
		Cl sh	0' 3"																Parting.		
		Coal	3' 4 1/2"	0-40 1/2		N1		+		+	+	MB	1.1	40.3	50.8	7.8	4.09	13526	Pyrite partings.		
													1.1	40.5	50.2	8.2	3.94	13466	Seam average of 25-C-2, Upper Freeport (E)? coal.		

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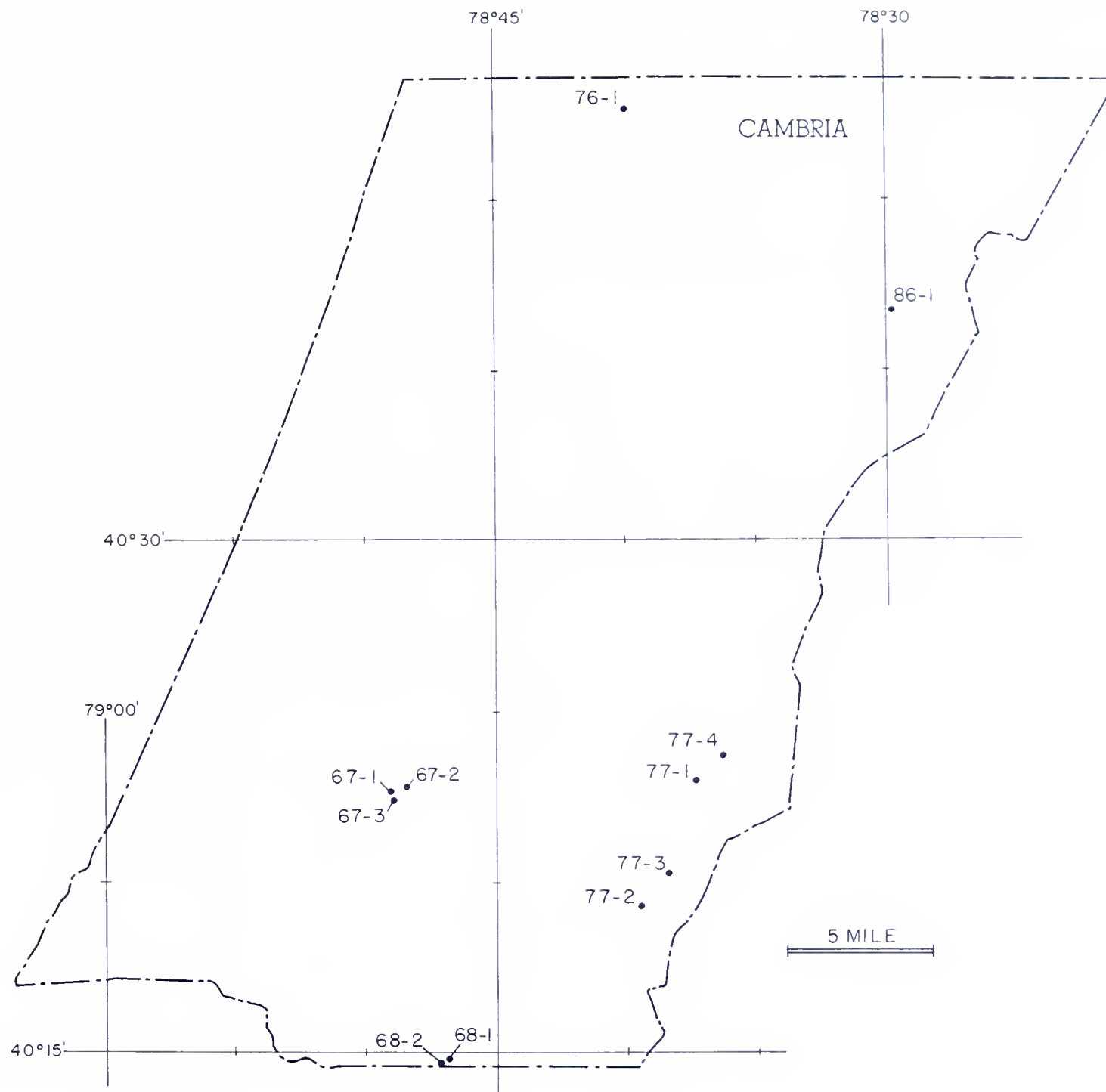
SITE/STATION NO.		34-2		LAT °N.		41°07'46"		COUNTY		Butler		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)		34-C-2, -8		LONG °W.		79°43'20"		TWP.		Allegheny		COMMENTS									
COMPANY		C. L. Amos Co., Inc.		GEOLOGIST		adg		15' QUADRANGLE		Foxburg											
MINE		PERMIT 47-1A		DATE		8-9-66		7 1/2' QUADRANGLE		Emlenton											
COAL(S) REPORTED		Lower Clarion and Upper Clarion.																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE		THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	50' - 65'																				
4	40' 0"	St sh				N5												Beds 1/4" - 3"; rubbly; plt. frgs..			
3	3' 10"	Coal	2' 6"	16-46	S	N1	+	+		+	MD	1.2	35.9	60.3	2.6	1.78		14260			
		Bone	0' 2"																Parting.		
		Coal	0' 3"	11-14		N1	+			+	MD	1.1	32.1	55.8	11.0	2.83		12860			
		Bone	0' 2"																Parting.		
		Coal	0' 9"	0-9		N1		+	+		+	MD	1.1	34.9	49.4	14.7	1.84	12310	Bony.		
												1.2	35.4	57.6	5.8	1.87	13742	Seam average of 34-C-8, Upper Clarion coal.			
2	2' - 17'	Ss			S													Quartzitic, with pyrite flakes.			
1	3' 7 1/2"	Coal	0' 10 1/2"	33-43 1/2	S	N1		+		+	+	1.2	34.5	53.8	10.5	6.41		12890	Thin Sh partings, soft.		
		Sts	0' 1 1/2"																Parting; tough.		
		Coal	2' 1 1/2"	6-31 1/2		N1	+	+		+	MB MD	1.1	38.3	54.7	5.9	3.05		13800			
		Sh	0' 1"			bn.													Semi-plastic.		
		Coal	0' 5"	0-5		N1		+		+	+	D	1.3	34.1	53.7	10.9	4.02	12780			
												1.2	36.8	54.3	7.7	4.03	13442	Seam average of 34-C-2, Lower Clarion coal.			

SITE NO. 34 - 9 (page 1)

SITE/STATION NO.		34-9 (page 2)		LAT °N.		41°04'28"		COUNTY		Butler		WEATHERING		fresh		JOINTING		N85°W											
COAL SAMPLE NO(S)				LONG °W.				79°04'53"				TWP.				Parker				COMMENTS				Survey designation: Possibly a split thick Upper Freeport (E).					
COMPANY				Richards Coal Co.				GEOLOGIST				wee				15' QUADRANGLE				Foxburg									
MINE		PERMIT		54-2		DATE		5-19-66		7 1/2' QUADRANGLE		Parker																	
COAL(S) REPORTED				Lower Freeport (D)				and Upper Freeport (E).																					
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS										
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH								
							% ABUN - DANCE																						
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"						
T	44'																												
6	15' 0"	Ss	6' 0"			N7													Beds 3" - 1'; blocky; mica 1 - 2, c; branches, leave plt. frgs., c; fine-to medium-grained, clay matrix, dark minerals, clay pebble Cgl.										
		Ss	6' 0"			N7												Solid; frag's. 1/2"; blocky; mica 1 - 2, c; branches, trunks, c; fine-to medium-grained, clay matrix, da minerals, clay pebble Cgl.											
		Ss	3' 0"			N7												Beds 1'; slabby; develop in large-scale cross-beds t the west, with channel axis N-S; mica 1 - 2, c; branches, plt. frgs., c; fine- to medium-grained, c matrix, clay pebble Cgl. Unit 6: Channel filling with N-S axis.											
5	7' 6"	Cl sh	2' 0"		U	N6													Silty; beds 1/8" - 1/4"; chippy; mica 1, c.										
		St sh	1' 6"		G	N3													Beds 1/8" - 1/2"; chippy; mica 1, c; plt. frgs, leaves, c.										
		lss st	1' 6"		G	N4, N6													Beds 1/2" - 3"; slabby; plt. frgs, leaves, a.										
		St sh	2' 0"		G	N4													Mica 1, c; plt. frgs, leaves, c.										
		Cl sh	0' 6"		G	N1													Beds 1/4" - 1/2"; chippy; mica 1, c; <u>Estheria</u> sp.										
4	3' 4"	Coal		0-40	S	N1				VB									Blocky fracture; several impersistent pyrite-shale partings. Unit 4: Upper Freeport (E) coal.										
3	16' 0"	Uc	1" - 2"		S																								
		Cl sh	11' 0"		G	N2													Silty; beds 1/8" - 1/4"; chippy; plt. frgs, leaves, a; <u>Estheria</u> sp.; less silty upward.										
		Cs	5' 0"		G	N5													Beds 1/2" - 1'; hackly.										

STATION NO. 35-10		LAT °N. 40°53'30"		COUNTY Butler		WEATHERING fresh		JOINTING												
L SAMPLE NO.(S) 35-C-9, -10		LONG °W. 79°43'26"		TWP. Donegal		COMMENTS														
PANY Tri-County Fuel Co.		GEOLOGIST adg		15' QUADRANGLE Kittanning																
PERMIT 13-10		DATE 7-18-68		7 1/2' QUADRANGLE Chicora																
L(S) REPORTED Upper Clarion? and Lower Clarion?																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
COSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON					ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE			THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"						1/8" - 1/4"				
25' - 28'																			Coals analyzed M/7-25-69	
20' 0"	Ss				N7														Mica 2, c; medium-grained; clay matrix; beds 3" - 2'.	
0' - 3'	Cl sh			U	N4														Silty; subfissile; platy, hackly; plt. frgs., a; beds 1/4" - 1/2".	
1' 6"	Coal		0-18	S	N1	+				+	+		MB	1.8	35.3	52.1	10.9	4.30	12945	Pyrite. 35-C-10, Upper Clarion? coal.
1' 11 1/2"	Cl sh			S																Parting; wet.
2' 4 1/2"	Coal	1' 2"	14 1/2-28 1/2	S	N1	+				+			MD	1.9	34.4	56.9	6.8	2.23	13575	
	Bone	0' 1 1/2"		S																Parting.
	Coal	1' 2"	0-14	S	N1	+				+			MB	2.0	33.5	55.8	8.7	2.08	13187	Fusain.
														2.0	34.0	56.3	7.7	2.16	13381	Seam average of 35-C-9, Lower Clarion? coal.
0' 2"	Sh			S	N1															Coaly streaks.
0' 6"+	Uc			S																Plastic.

SITE/STATION NO.		35-12		LAT °N.		40°56'24"		COUNTY		Butler		WEATHERING		fresh		JOINTING						
COAL SAMPLE NO.(S)		35-C-12		LONG °W.		79°44'22"		TWP.		Donegal		COMMENTS										
COMPANY				West Freedom Mining Co.				GEOLOGIST		adg		15' QUADRANGLE		Kittanning								
MINE		PERMIT 68-13		DATE		7-18-68		7 1/2' QUADRANGLE		Chicora												
COAL(S) REPORTED Upper Freeport (E).																						
S T R A T I G R A P H I C D A T A																						
GROSS UNIT																						
NUMBER	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S					
							ANTHRAXYLON						PROXIMATE (%)									
							% ABUN - DANCE				THICK - NESS		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T	34'																Coals analyzed M/7-25-69					
5		cover															Soil. Large reddish-purplish clay zones which resemble purplish clay seen at Site 45-7 (mine permit 125) in the Rural Valley 15' quadrangle.					
4	12'+	Cl sh				5Y 6/4											Fissile; platy; beds 1/4" - 1/2".					
3	15'	Cl sh			G	N4											Fissile; platy; siderite bands, r; beds 1/8" - 1/4".					
2	3' 9"	Sh			S	N1											Bony; leaves, a; coaly streaks.					
1	3' 6 1/2"	Coal	2' 4"	14 1/2 - 42 1/2	S	N1	+		+	+	MB	2.2	32.5	58.4	6.9	0.83	13333	Shale partings.				
		Sh	0' 1/2"		S													Parting.				
		Coal	0' 7 1/2"	6 1/2 - 14	S	N1	+			+	MB	1.8	32.0	54.6	11.5	1.02	12679	Thin shale partings.				
		Coal	0' 6 1/2"	0 - 6 1/2		N1	+			+	MB	2.0	29.6	53.7	14.7	1.22	12123	Bony streaks; fusain.				
												2.1	32.0	57.0	8.9	0.92	13029	Seam average of 35-C-12, Upper Freeport (E) coal.				



SITE/STATION NO. 67-1		LAT °N. 40°22'34"		COUNTY Cambria		WEATHERING		JOINTING													
COAL SAMPLE NO.(S) 67-C-1		LONG °W. 78°49'00"		TWP. East Taylor		COMMENTS															
COMPANY Ace Drilling Co.		GEOLOGIST tmb		15' QUADRANGLE Johnstown																	
MINE Ace		PERMIT 218-1		DATE 6-15-66		7 1/2' QUADRANGLE Geistown															
COAL(S) REPORTED Lower Kittanning (B).																					
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	27'																				
6	4'+	cover																			
5	5" - 6"	Coal				N1												Blossom. Lower Kittanning (B) rider coal.			
4	3' 0"	Cl sh			S	5Y 7/2												Silty; beds 1/4" - 3"; platy, rubbly; rootlets, a.			
3	10' 0"	Ss				N6												Fissile; beds 1/4" - 3"; platy; tiny cross-laminae; mica, a; plt. frgs.; very fine-grained, excellent sorting, subangular, dark minerals; slightly porous permeable; carbonaceous.			
		Cl sh			G	N4												Fissile; beds 1/32" - 3"; platy, chippy, blocky, hackly; mica, c; plt. frgs. Unit 3: Interlaminated; with Ss increasing upward.			
2	5' 4"	Coal	3' 9"	19-64		N1	+			+	+	MB	0.9	15.9	76.0	7.2	0.57	13970	Smooth fracture; upper 1' more dull attritus.		
		Cl sh	0' 8"			N4						MD							Parting, silty; variable thickness.		
		Coal	0' 11"	0-11	S	N1	+			+		D-VD	1.1	15.7	54.6	28.6	2.83	9880	Cubic, rough fracture; upper 3' more dull attritus.		
													0.9	15.9	71.8	11.4	1.01	13166	Seam average of 67-C-1, Lower Kittanning (B) coal.		
1	4' - 6'	Uc			S														Discontinuous, locally sandy. Mined; sampled.		

TE/STATION NO.	67-2 (page 1)	LAT °N.	40°22'45"	COUNTY	Cambria	WEATHERING	JOINTING Vertical; N81°W
COAL SAMPLE NO.(S)	67-C-2	LONG °W.	78°48'29"	TWP.	East Taylor	COMMENTS	
COMPANY	Ace Drilling Co.	GEOLOGIST	tmb	15' QUADRANGLE	Johnstown		
LINE	Ace	PERMIT	218-1	DATE	6-15-66	7 1/2' QUADRANGLE	Nanty Glo
COAL(S) REPORTED	Upper Freeport (E).						

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S		
GROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON							MOISTURE	VOLATILE	FIXED CARBON	ASH				
						% ABUN - DANCE				THICK - NESS										
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"								
10' 6"	Sts			G	N4													Fissile; beds 1/32" - 1/2"; platy, chippy; mica; leaves, a; lighter in color near top.		
0' 3"	Ss			S	N5													Beds 3" - 1'; mica; fine-grained, clay matrix, silica cement, dark minerals, carbonaceous material.		
3' 5"	Cl sh			S	N4													Fissile; beds 1/32" - 1/4"; chippy; black at bottom.		
2' 10"	Coal	2' 4"	6-34			+			+		VB	0.8	17.4	73.7	8.1	2.65	13870	Rough to cubic fracture; pyrite on joints.		
	Cl sh	0' 1"																Parting; carbonaceous.		
	Coal	0' 5"	0-5	S	N1	+			+		MB	0.8 0.8	17.4 17.4	72.4 73.5	9.4 8.3	2.26 2.32	13470 13809	Better cubic fracture than upper 2' 4". Seam average of 67-C-2, Upper Freeport (E) coal.		
Few 14"	Cl sh			S	N3													Beds 1/2" - 3"; rubbly; rootlets, a.		

SITE/STATION NO.		67-2 (page 2)		LAT °N.		40°22'45"		COUNTY		Cambria		WEATHERING		JOINTING Vertical; N81°W.						
COAL SAMPLE NO.(S)		67-C-2		LONG °W.		78°48'29"		TWP.		East Taylor		COMMENTS								
COMPANY		Ace Drilling Co.		GEOLOGIST		tmb		15' QUADRANGLE		Johnstown										
MINE		Ace		PERMIT		218-1		DATE		6-15-66		7 1/2' QUADRANGLE		Nanty Glo						
COAL(S) REPORTED				Upper Freeport (E).																
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE													
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
T	64'																			
15	18' 0"	Cs				5Y 5/2												Rubblly. Unit 15: Grades upward to silty Cs, subfissile, yellowish orange. Ground water, a. A granular Cgl (15' - 20' thick), Mahoning?, in woods back of stripping.		
14	9' 0"	Cl sh			S	5Y 6/1												Beds 1/4" - 3"; platy; coarser upward; interbedded with some fine-grained Ss.		
13	0' 3"	Clay			S	N5												Plastic; carbonaceous laminae at bottom; upper few inches a very fine-grained Ss.		
12	6' 0"	Cl sh			S	N6												Silty; fissile; beds 1/32" - 1/4"; chippy; limonite concretions and nodules, siderite, r; less fissile upward.		
11	0' 8"	Ss			S	N6												Solid (one bed); very fine-grained, clay matrix, dark minerals; Fe-stain on weathered surface, a.		
10	0' 7"	Cl sh			S	N6												Silty; fissile; beds 1/32" - 1/4"; chippy; limonite nodules; siderite, r.		
9	0' 7"	Ss			S	N6												Solid (one bed); very fine-grained, clay matrix, dark minerals; Fe-stain on weathered surface, a.		
8	1' 0"	Cl sh			S	N6												Silty; fissile; beds 1/32" - 1/4"; chippy; limonite concretions and nodules; siderite, r.		
7	0' 2"	Cl sh			S	N2												Carbonaceous.		
6	11' 0"	Ss			S	N5												Beds 3" - 2'; small hematite concretions; mica; very fine-grained; clay matrix, silica cement; carbonaceous material; coarser upward.		

TE/STATION NO.	67-3	LAT °N.	40°22'20"	COUNTY	Cambria	WEATHERING	JOINTING
COAL SAMPLE NO.(S)	67-C-3	LONG °W.	78°48'59"	TWP.	East Taylor	COMMENTS	Lower Kittanning (B) coal overlies Cl sh here. Uc not developed at this cut.
COMPANY	Ace Drilling Coal Co., Inc.	GEOLOGIST	tmb	15' QUADRANGLE	Johnstown		
NE Ace # 1	PERMIT 218-1	DATE	6-15-66	7 1/2' QUADRANGLE	Geistown		
COAL(S) REPORTED	Clarion coal.						

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S				
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE				THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
21' - 53'																						
18' - 50'	Cl sh																	N3 at bottom, through N5 and 5GY 6/1 in upper 10'; fissile; beds 1/2" - 1'; hackly. Upper 10' is more micaceous, greenish-gray, weathers to an iron stain. Zone of worm borings to 1/2" diameter at 6' above coal.				
3' 3"	Coal	0' 8"	31-39		N1	+				+		D	1.1	10.4	37.6	50.9	2.97	6600	Rough fracture. Discarded in mining.			
	Coal	1' 8"	11-31		N1	+				+		MB	0.8	14.5	78.2	6.5	1.47	14100	Cubic fracture.			
	Pyrite	0' 1"										MD							Parting.			
	Coal	0' 10"	0-10	S	N1	+				+	+	MB	1.2 1.0	15.9 14.1	69.5 68.2	13.4 16.8	6.53 3.12	12200 12167	Rough fracture; thin pyrite partings, r. Seam average of 67-C-3, Clarion coal.			
Few "+	Cl sh			S	N2														Fissile; beds 1/32" - 1/4"; chippy, hackly; bony.			

SITE/STATION NO.		68-1		LAT °N.		40°14'43"		COUNTY		Cambria		WEATHERING		fresh		JOINTING																																																							
COAL SAMPLE NO.(S)				LONG °W.				78°46'49"				TWP.				Adams				COMMENTS																																																			
COMPANY				Heshbon Coal Co.				GEOLOGIST				adg				15' QUADRANGLE				Windber																																																			
MINE				Eureka #42				PERMIT				200-1 (A2)				DATE				8-1-66				7 1/2' QUADRANGLE				-																																											
COAL(S) REPORTED				Lower Freeport (D).																																																																			
S T R A T I G R A P H I C																		D A T A																		COAL CHEMICAL ANALYSES																		C O M M E N T S																	
GROSS UNIT		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE, IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL						PROXIMATE (%)						SULFUR (%) AIR DRYING LOSS (%) BRITISH THERMAL UNITS																																															
NUMBER												INTERVAL (TOTAL)		ANTHRAXYLON				ATTRITUS LUSTER		MOISTURE		VOLATILE														FIXED CARBON		ASH																																	
														% ABUN - DANCE		THICK - NESS																																																							
														> 60 30 - 60 15 - 30 0 - 15		> 1/4" 1/8" - 1/4" 1/32" - 1/8" < 1/32"																																																							
T		34'								N5																																																													
3		30' 0"		Ss & St sh						N5																						Beds 1/2" - 3"; hackly; mica, r; silt to fine-grained; clay matrix and dark minerals, r; carbonaceous material, r.																																							
2		0' 8"		St sh				S		N4																						Beds 1/8" - 1/4"; hackly; conchostracans.																																							
1		2' 9"		Coal		0' 8 1/2"		24 1/2-33		S		N1				+				+		MD										Thin Sh partings.																																							
				Sh		0' 1 1/2"																										Parting.																																							
				Coal		1' 11"		0-23				N1				+		+				+		+		MB								Unit 1: Lower Freeport (D) coal.																																					

TE/STATION NO.	68-2	LAT °N.	40°14'35"	COUNTY	Cambria	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	78°47'02"	TWP.	Adams	COMMENTS			
COMPANY	Heshbon Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Windber				
LINE	Eureka # 42	PERMIT	200-1(A2)	DATE	8-1-66	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Upper Freeport (E).								

S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES					C O M M E N T S	
GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
							ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
27'																					
		cover																	Soil.		
6' 0"		C1				5GY 6/1													Semi-flint; beds 3" - 1'; blocky, rubbly.		
0' - 8'		Ss			U	N6													Beds 3" - 2'; very fine- to fine-grained; clay matrix and dark minerals, r. Lenses out laterally.		
18' 0"		C1 sh			S	N5													Beds 1/4" - 3"; hackly; siderite nodules; slickensides.		
2' 10"	Coal	2' 6"	4-34	S	N1	+				+	+	MB MD							Sh partings. Unit 3 (C1 sh) cuts out up to 8" of coal locally. Unit 2: Upper Freeport (E) (locally) coal.		
	Sh	0' 4"				N5													Tough; pyrite.		
		Uc			S	N5															

SITE NO. 76-1

SITE/STATION NO.	77-1	LAT °N.	40°22'54"	COUNTY	Cambria	WEATHERING	slight	JOINTING	
COAL SAMPLE NO.(S)	77-C-1	LONG °W.	78°37'29"	TWP.	Portage	COMMENTS			
COMPANY	Cooney Bros. Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Ebensburg				
LINE	PERMIT 238-2A	DATE	7-26-66	7 1/2' QUADRANGLE	Cresson				
DAL(S) REPORTED	Upper Freeport (E).								

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)	ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH											
	% ABUN - DANCE																					
	> 60											30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"					< 1/32"
36'																						
	cover																	Soil.				
30' 0" +	Ss					N5												Beds 3" - 1'; mica, r; very fine-grained; clay matrix and dark minerals, r.				
5' 3"	Coal	0' 5 1/2"	57 1/2-63	S	N1			+		+	+		D	1.3	16.4	60.7	21.6	9.66		10680	Thin Sh partings.	
	Sh	0' 7 1/2"																			Parting; dark.	
	Coal	2' 7"	19-50		N1			+		+			MD	1.0	18.4	71.2	9.4	2.80		13500	Sulfur bloom, r.	
	Sh	0' 1 1/2"																			Parting; dark.	
	Coal	1' 5 1/2"	0-17 1/2		N1			+		+	+		B MB	1.0	17.3	73.4	8.3	4.80		13390		
														1.0	17.8	70.8	10.3	4.15		13177	Seam average of 77-C-1, Upper Freeport (E) coal.	
0' 6" +	Uc				S	N6																Solid.

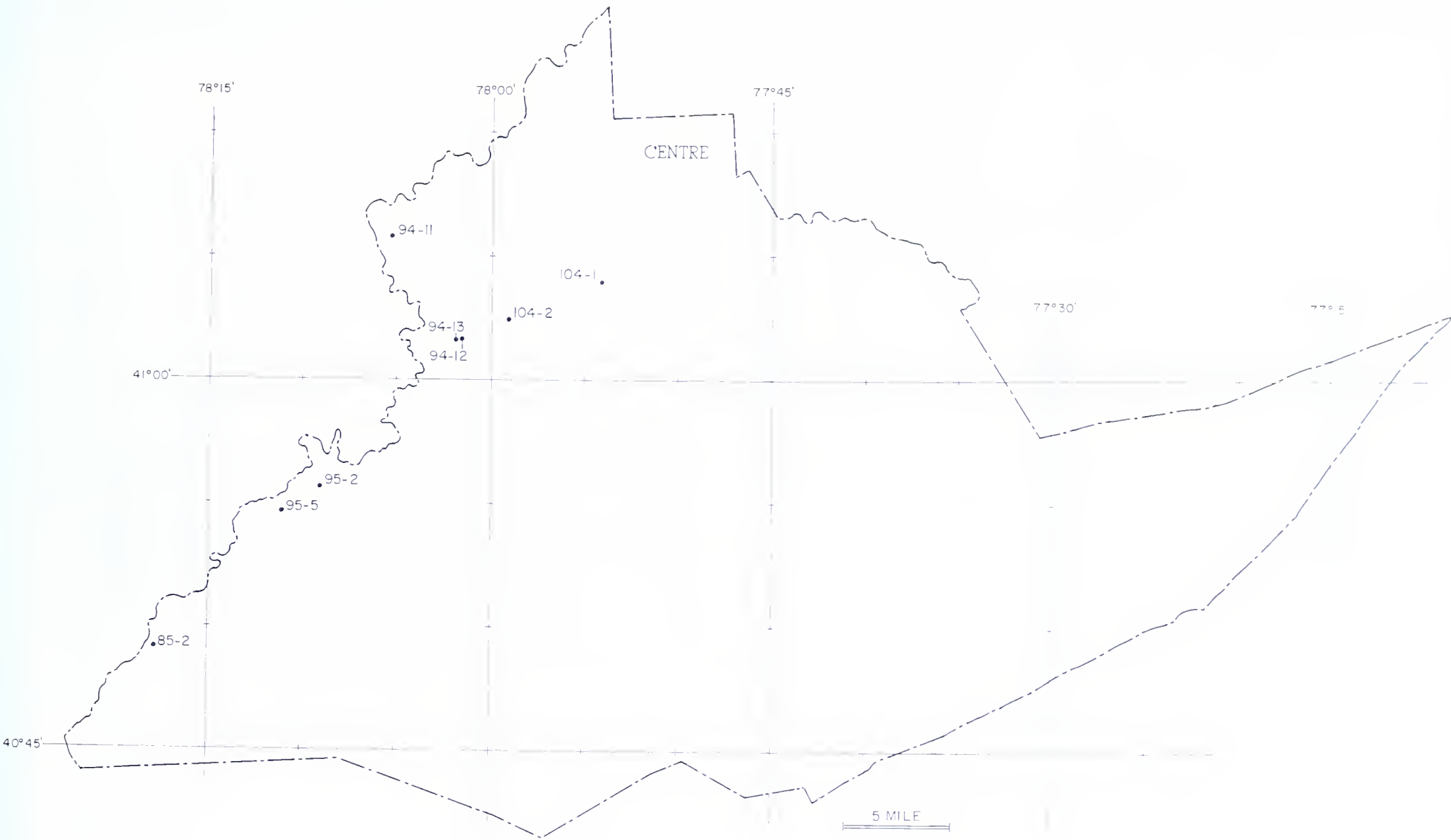
SITE/STATION NO.		77-2		LAT °N.		40°19'15"		COUNTY		Cambria		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		77-C-2		LONG °W.		78°39'30"		TWP.		Summerhill		COMMENTS									
COMPANY				Cooney Bros. Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Ebensburg							
MINE		Feller # 2		PERMIT		238-1A2		DATE		7-25-66		7 1/2' QUADRANGLE		Beaverdale							
COAL(S) REPORTED				Lower Freeport (D)? and Upper Freeport (E)?																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	50'																				
10		cover																Soil.			
9	2' 0"	Coal				N1												Blossom. Upper Freeport (E)? coal.			
8	12' 0"	Sh			S																
7	0' 2"	Coal		0-2	S	N1															
6	8' 0"	St sh			S	N5												Beds 1/4" - 1/2"; hackly.			
5	0' 4"	Coal		0-4	S	N1															
4	22' 0"	Ss			S	N6												Beds 1/2" - 3"; mica, c; very fine- to medium-grained; clay matrix and dark minerals, c.			
3	0' 9"	Cl sh			S	N5												Beds 1/4" - 1/2"; plt. frgs., c; thin St sh interbeds, r.			
2	4' 1"	Coal	0' 10"	39-49	S	N1	+			+	+	MD	1.1	16.4	73.2	9.3	2.22	13500	Pyrite partings.		
		Bone	0' 1 1/2"																Parting.		
		Coal	3' 2 1/2"	0-38 1/2		N1	+			+			MD	1.1	16.5	73.8	8.6	2.21	13790	Very thin Sh partings.	
													1.1	16.5	73.7	8.7	2.21	13730	Seam average of 77-C-2, Lower Freeport (D)? coal.		
1	0' 6"	Uc			S	N6													Solid.		

SITE/STATION NO.		77-3		LAT °N.		40°20'13"		COUNTY		Cambria		WEATHERING fresh		JOINTING								
COAL SAMPLE NO.(S)		77-C-3		LONG °W.		78°38'28"		TWP.		Portage		COMMENTS										
COMPANY		Cooney Bros. Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Ebensburg												
MINE		PERMIT 238-1A2		DATE		7-25-66		7 1/2' QUADRANGLE		Beaverdale												
COAL(S) REPORTED		Lower Freeport (D)? and Upper Freeport (E)?																				
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
							% ABUN - DANCE			THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
T	60'																					
9		cover																				Soil.
8	8' 0"	St sh				N4																Fissile; beds 1/4" - 1/2"
7	0' 4"	Coal		0-4	S	N1																Upper Freeport (E)? coal.
6	24' 0"	St sh			S	N5																Beds 1/4" - 1/2"; equant.
5	0' 8"	Coal		0-8	S	N1																
4	3' 0"	Uc			S	N6																Solid.
3	16' 0"	lss st			L	N5																Beds 1/4" - 1/2"; equant.
2	2' 4"	Cl sh			S																	Beds 1/8" - 1/4"; equant.
1	5' 9"	Coal	0' 7 1/2"	61 1/2-69	S	N1			+	+		+	D	1.0	16.7	71.1	10.6	2.17		13350		Thin Sh partings.
		Coal	0' 10"	51 1/2-61 1/2		N1			+	+		+	MD	1.0	16.4	75.0	7.6	1.85		14070		
		Coal	2' 10 1/2"	17-51 1/2		N1			+	+		+	MB	0.9	16.9	76.6	5.6	1.47		14270		Thin Sh partings.
		Sh	0' 4"																			Parting; tough.
		Coal	1' 1"	0-13		N1			+			+	+	D	0.9	16.5	69.1	13.5	1.81		12800	
														0.9	16.7	74.2	8.1	1.68		13839		Seam average of 77-C-3, Lower Freeport (D)? coal.

SITE/STATION NO.		77-4		LAT °N.		40°23'40"		COUNTY		Cambria		WEATHERING		JOINTING						
COAL SAMPLE NO.(S)				LONG °W.				78°36'17"				TWP.		Washington		COMMENTS				
COMPANY				Cooney Bros. Coal Co.				GEOLOGIST		tmb		15' QUADRANGLE		Ebensburg						
MINE		Strawberry		PERMIT		238-2		DATE		7-23-66		7 1/2' QUADRANGLE		Cresson						
COAL(S) REPORTED				Lower Kittanning (B).																
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)			
							% ABUN - DANCE		THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15								> 1/4"		
T	39'																			
11	8' 0"	Sts & Ss				5GY 6/1, 5Y 5/1											Fissile; beds 1/4" - 3"; platy; mica, c; silt to very fine-grained, clay matrix. Interbedded.			
10	2' - 13'	Ss			S	N6											Beds 3" - 2'; Calamites sp.; very fine-grained, clay matrix, silica cement. Imbricated.			
9	4' 6"	Cl sh			S	N4											Fissile; beds 1/32"-1/2"; platy, chippy; plt. frgs.; Fe-stain, a; N1, at top.			
8	1' 4"	Coal		0-16	S	N1											Lower Kittanning (B) rider coal.			
7	11' 0"	Cs			S	5Y 5/1											Beds 2' - 4'; solid; rubbly; rootlets, r; grades into typical Uc in upper 1'+.			
6	2' 0"	Ss			G	N8, 5Y 6/1											Beds 1/4" - 1/2"; platy; limonite; very fine-grained, clay matrix, silica cement; shaly laminae.			
5	2' 9"	Cl sh			S	5Y 4/1											Solid; rubbly.			
4	1' 4"	Ss			S	5YR 7/1											Beds 1/2" - 1'; rootlets, r; medium-grained, clay matrix, silica cement; carbonaceous material.			
3	1' 4"	Cl sh			S	N3											Fissile; beds 1/32" - 1/2"; platy, chippy, hackly; 1" plastic clay at top.			
2	3' 5"	Coal		0-41	S	N1											Lower Kittanning (B) coal.			
1	1'+	Uc			S	N4											Subfissile; rootlets.			

[illegible]

SITE/STATION NO. 86-1 (page 2)		LAT °N. 40°36'39"		COUNTY Cambria		WEATHERING fresh		JOINTING												
COAL SAMPLE NO.(S)		LONG °W. 78°29'43"		TWP. Dean		COMMENTS Units 8 - 9 partially covered.														
COMPANY Cooney Bros. Coal Co.		GEOLOGIST tmb		15' QUADRANGLE Altoona																
MINE Dean #1		PERMIT 238-5		DATE 8-22-66		7 1/2' QUADRANGLE Altoona														
COAL(S) REPORTED		Lower Kittanning (B).																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN -													
							DANCE	THICK -												
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"											
T	50'																			
12	1' 0"	C1 sh				N2												Subfissile; beds 1/8" - 1/4"; chippy; carbonaceous; extremely weathered. Possibly a coal blossom.		
11	1' 3"	C1 sh			S	5Y 5/2												Fissile; beds 1/4" - 1/2"; chippy; siderite nodules.		
10	0' 4"	Ls			S	N2												Frag's. +1/2"; blocky, rubbly; micritic; ostracodes, c.		
9	5' 2"	C1 sh	2' 8"		S	5Y 5/2												Fissile; beds 1/4" - 1/2"; chippy.		
		C1 sh	1' 0"		S	5Y 5/2											Fissile; beds 1/32" - 1/4"; platy, chippy; very dense.			
		C1 sh	1' 6"		S	5Y 3/2											Fissile; beds 1/4" - 1/2"; chippy.			
8	4' 0"	Ss			S	N8												Beds 1/4" - 1/2" and 1' - 2'; flaggy (near top); mica 1, r; fine-grained.		
7	3' 0"	Ss & Clay			S	5Y 5/2												Subfissile; beds 1/2" - 3" (poorly bedded); chippy, slabby; clay is "flinty". Interbedded.		
6	6' 10"	Cs	2' 8"		S	5Y 5/2												Extremely friable; solid; rubbly; thin coal blossom top.		
		Ls	1' 4"		S												Nodular (at top); limonite.			
		Cs	2' 0"		S	5Y 6/4											Solid; hackly, rubbly; extremely friable and soft.			
		Ls	0' 10"		S												Clayey; fresh-water; nodular; limonite.			
5	14' 6"	Iss st	3' 6"		S	5Y 5/1												Beds 1/4" - 3" (less fissile near top); platy; mica 2, rootlets (near top); silt to very fine-grained.		
		St sh	0' 8"		G	5Y 5/2											Fissile; beds 1/8" - 1/4"; chippy; mica 2, a.			
		C1 sh	0' 10"		G	5Y 5/2											Fissile; beds 1/8" - 1/4"; chippy.			
		St sh	0' 6"		G	5Y 5/2											Fissile; beds 1/8" - 1/4"; chippy; siderite nodules to 1/2", c; mica 2, a.			
		Iss st	9' 0"		G	5Y 5/1											Beds 1/4" - 3" (thinner bedded upward); siderite nodules, r; mica 2, c; silt to very fine-grained.			
4	3' 9"	Ss			S	5B 7/1, 10YR 6/4												Beds 2' - 4'; solid, blocky; mica 2, c; very fine-grained, fair sorting, clay matrix, dark minerals; coaly near bottom.		



SITE/STATION NO.		85-2		LAT °N.		40°49'04"		COUNTY		Centre		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		85-C-93		LONG °W.		78°17'50"		TWP.		Rush		COMMENTS		Raining: Measurements approximated toward top and colors may be wet.							
COMPANY		Elliot Coal Mine Co.		GEOLOGIST		wee		15' QUADRANGLE		Houtzdale											
MINE		Dugan		PERMIT		59-7		DATE		6-22-67		7 1/2' QUADRANGLE		Houtzdale		Survey identification: Unit 2, Middle Kittanning (C), unit 6, Middle Kittanning (C) rider, Unit 8, Upper Kittanning (C').					
COAL(S) REPORTED		Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE			THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	67'																	Coal analyzed M/7-7-69			
9	20'+	Ss																Beds 6" - 2'; mica l, c.			
8	1' 10"	Coal		0-22	S	N1												Upper Kittanning (C') coal.			
7	27' 0"	Uc Cs St sh			S													Unit 7: Generalized section. Grades upward, as shown.			
6	1' 0"	Coal		0-12	S	N1												Middle Kittanning (C) rider coal.			
5	9' 0"	Sts			S	N4												Beds 1" - 1'; mica l, c; plt. frgs., c.			
4	5' 6"	Ss			S	N5												Fissile; beds 1" - 4"; mica l, c; plt. frgs., leaves, c; silt to very fine-grained; local coal stringer at top.			
3	19' 0"	Sts	17' 0"		G	N1												Clayey; subfissile; beds 3" - 6"; rubbly; branches, plt. frgs., leaves, c.			
		Cs	2' 0"		G	N3											Subfissile; beds 3" - 6"; rubbly; branches, plt. frgs., leaves, c.				
2	3' 1"	Bone	0' 5"		S	N2			+		+							Not sampled.			
		Coal	2' 8"	0-32	S	N1			+		+	+	B-VB	0.7	22.8	66.2	10.3	2.06	13284	Thin discontinuous partings, r. 85-C-93, Middle Kittanning (C) coal.	
1		Uc			S																

ITE/STATION NO.	94-11	LAT °N.	41°05'49"	COUNTY	Centre	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	78°05'26"	TWP.	Burnside	COMMENTS Operator noted that unit 1 is "upper A", unit 3 is			
COMPANY	Cherry Run Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Karthus	Lower Kittanning (B) coal. Also that "lower A" lies 50' below			
INE	Pine Glen	PERMIT	230-1	DATE	6-9-66	7½' QUADRANGLE	Karthus	unit 1 and ranges from 11" to 3' thick, averaging about 2' 2" and	
COAL(S) REPORTED	Upper Clarion? and Lower Kittanning (B)?						has been mined out in this area.		

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
GROSS UNIT	L I T H O L O G Y	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"		< 1/32"	MOISTURE	VOLATILE	FIXED CARBON					ASH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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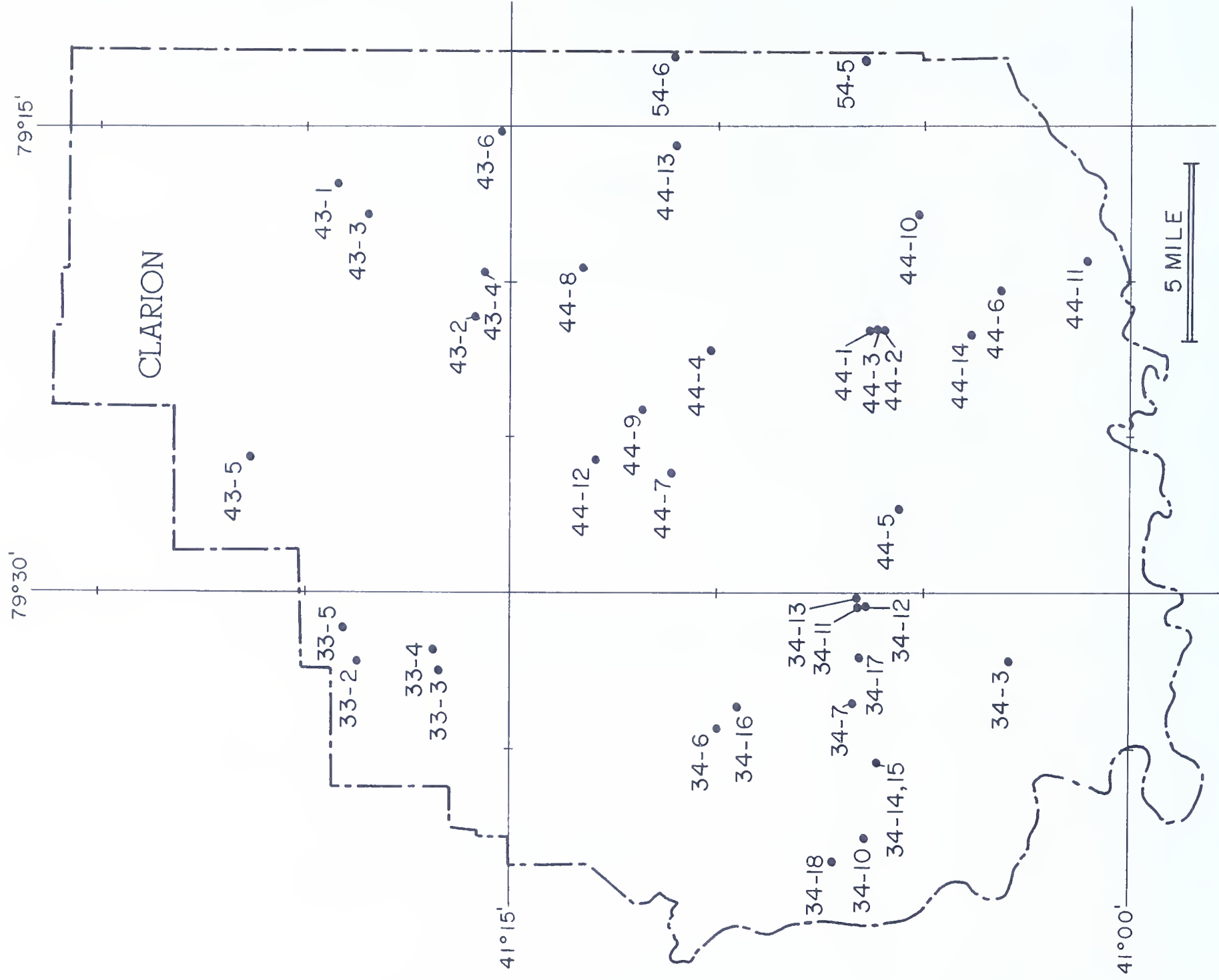
SITE/STATION NO. 94-12				LAT °N. 41°01'33"				COUNTY Centre				WEATHERING fresh				JOINTING							
COAL SAMPLE NO.(S)				LONG °W. 78°01'35"				TWP. Snow Shoe				COMMENTS 60'+ interval between Lower Kittanning (B) coal and Middle Kittanning (C) coal.											
COMPANY Koshko Bros. Coal Co.				GEOLOGIST adg				15' QUADRANGLE Karthaus															
MINE Koshko Estate		PERMIT 241-1		DATE 6-9-66		7 1/2' QUADRANGLE		Karthaus		Units 4 - 6 inaccessible.													
COAL(S) REPORTED Lower Kittanning (B).																							
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN - DANCE																
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
T	32' - 38'																						
6		cover																Soil.					
5	15' 0"+	Ss				N6												Beds 1/2" - 3"; flaggy; mica, r; very fine- to fine-grained; clay matrix and dark minerals, r; carbonaceous material, r.					
4	0' 8"	Coal		0-8	S	N1												Coal splits and is separated to 4' by Sts.					
3	12' - 15'	St sh			S	N3												Mica, r; clay galls, r; thin Ss interbeds, very fine-grained.					
2	1' - 4'	St sh			L	N4												Beds 1/4" - 1/2"; hackly; siderite nodules, a.					
1	3' 2"+	Coal	1' 0"	26-38	S	N1												Bony; thin coaly streaks.					
		Sh	0' 2"														Parting.						
		Coal	2' 0"+	0-24		N1	+	+		+	MD						Thin Sh partings; base not seen. Unit 1: Lower Kittanning (B) coal.						

SITE/STATION NO. 94-13		LAT °N. 41°01'32"		COUNTY Centre		WEATHERING fresh		JOINTING	
COAL SAMPLE NO(S)		LONG °W. 78°01'43"		TWP. Snow Shoe		COMMENTS			
COMPANY Koshko Bros. Coal Co.		GEOLOGIST adg		15' QUADRANGLE Karthaus					
INE Koshko Estate		PERMIT 241-1		DATE 6-9-66		7 1/2' QUADRANGLE Karthaus			
COAL(S) REPORTED		Middle Kittanning (C).							
S T R A T I G R A P H I C D A T A									
COAL CHEMICAL ANALYSES									
C O M M E N T S									
GROSS UNIT									
INTERVAL (TOTAL)									
LITHOLOGY									
INTERVAL (SUB - UNIT)									
COAL BENCHES CUMULATIVE, IN INCHES									
CONTACT (UPPER)									
COLOR (MUNSELL)									
COAL									
ANTHRAXYLON									
% ABUN - DANCE									
THICK - NESS									
ATTRITUS LUSTER									
MOISTURE									
VOLATILE									
FIXED CARBON									
ASH									
SULFUR (%)									
AIR DRYING LOSS (%)									
BRITISH THERMAL UNITS									
23' - 27'									
cover									
18' 0"									
Ss									
N6									
0' - 3'									
Cl sh									
U N4									
0' 6"									
Sh									
S N1									
5' 0"									
Bone									
0' 2"									
L									
Coal									
1' 5 1/2"									
40 1/2 - 58									
N1									
+ +									
+ +									
D									
Bone									
0' 2"									
Coal									
0' 8 1/2"									
30 - 38 1/2									
N1									
+ +									
B									
Bone									
0' 1 1/2"									
Coal									
0' 7 1/2"									
22 - 29 1/2									
N1									
+ +									
MD									
Cl sh									
0' 7"									
Coal									
1' 3"									
0 - 15									
N1									
+ +									
+ +									
MD									
3' +									
Uc									
S 5YR 6/1									

SITE/STATION NO.		95-2		LAT °N.		40°55'41"		COUNTY		Centre		WEATHERING		fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COAL SAMPLE NO.(S)				LONG °W.				78°09'02"				TWP.		Rush				COMMENTS		James M. Stott Coal Co., contractor.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
COMPANY				Penbrook Contracting Co.				GEOLOGIST		wee		15' QUADRANGLE		Philipsburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
MINE		Rush # 1		PERMIT		278-2		DATE		7-13-67		7 1/2' QUADRANGLE		Philipsburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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GROSS UNIT		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE, IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL						PROXIMATE (%)			BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
NUMBER												INTERVAL (TOTAL)		ANTHRAXYLON				ATTRITUS LUSTER		MOISTURE			VOLATILE		FIXED CARBON		ASH		SULFUR (%)		AIR DRYING LOSS (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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SITE/STATION NO.		104-1		LAT °N.		41°04'04"		COUNTY		Centre		WEATHERING		JOINTING				
COAL SAMPLE NO.(S)				LONG °W.		77°05'02"		TWP.		Snow Shoe		COMMENTS						
COMPANY				R. S. Carlin, Inc.		GEOLOGIST		adg		15' QUADRANGLE		Snow Shoe						
MINE		# 26		PERMIT		134-9		DATE		7-1-66		7 1/2' QUADRANGLE		Snow Shoe				
COAL(S) REPORTED				Clarion.														
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH
							% ABUN - DANCE				THICK - NESS							
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						
T	29'																	
4		cover														Soil.		
3	20' 0"	St sh				N6										Beds 1/2" - 3".		
2	6' 0"	Sh			S	N1										Blocky; lower portion is nonbanded.		
1	3' 5"	Coal	0' 5"	36-41		N1					D					Blocky; nonbanded.		
		Sh	0' 6"			N1												
		Sh	0' 7"			N1										Thin coal streaks.		
		Coal	1' 3"	8-23		N1										Banded; thin Sh partings.		
		Bone	0' 1"															
		Coal	0' 7"	0-7		N1					B					Banded. Unit 1: Clarion coal.		

SITE/STATION NO.		104-2		LAT °N.		41°02'30"		COUNTY		Centre		WEATHERING		fresh		JOINTING											
COAL SAMPLE NO.(S)				104-C-1, -2, -3				LONG °W.		77°58'06"		TWP.		Snow Shoe		COMMENTS											
COMPANY				Von B. Johnson and Son				GEOLOGIST		wee		15' QUADRANGLE		Snow Shoe													
MINE				#10 strip				PERMIT		407-1C		DATE		6-20-67		7 1/2' QUADRANGLE		Snow Shoe									
COAL(S) REPORTED				Lower Kittanning (B).																							
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS								
NUMBER	INTERVAL (TOTAL)						% ABUN- DANCE			THICK- NESS			ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH					
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"											1/32" - 1/8"	< 1/32"			
1	30'																										
		Cs	3' 0"			N9													Silty; beds 1/4" - 1"; slabby; mica l, c; plt. frgs., leaves, c.								
0	3' 4"	Sts	0' 4"		G	N3													Clayey; beds 1/2" - 1"; blocky; mica l, c; plt. frgs., a. Expressed as a dark band in the highwall.								
		Sts	13' 0"		S	N4													Clayey; fissile; beds 1" - 3"; slabby, rubbly; plt. frgs., c - a; peacock stain on plant fragments.								
9	18' 0"	lsc st	5' 0"		G	N3 - N5													Fissile; beds 5" - 1'; slabby; plt. frgs., leaves, c - r; siderite nodules and bands, r; <u>Lingula</u> sp. in thin Cl sh unit 3' from bottom.								
3	1' 0"	Cl sh			G	N1 - N2													Fissile; beds 1/8" - 1/2"; hackly, hard, brittle; mica l, r; plt. frgs., leaves, a.								
7	2' 6"	lss st - Sts			S	N3 - N5													Fissile; beds 1/2" - 8"; slabby; mica l, c; plt. frgs., leaves, a.								
6	1' 7"	Coal	0' 8"	11-19	S	N1		+		+	+	D	0.3	20.4	50.4	28.9	0.82	10549	Cubic fracture.								
		Coal	0' 11"	0-11	S	N2		+		+	+	MB	0.4	23.6	67.5	8.5	0.88	13986	Cubic fracture.								
													0.3	22.2	60.3	17.1	0.85	12539	Seam average of 104-C-3, Lower Kittanning (B ₃) coal.								
5	0' 9 1/2"	Cl sh			S	N3 - N4													Fissile; beds 1/32" - 1/4"; chippy; plt. frgs., leaves, a.								
4	1' 1 1/2"	Coal		0-13 1/2	S	N1		+		+	+	MB	0.4	21.1	52.6	25.9	0.85	11009	Cubic fracture; thin partings, c. 104-C-2, Lower Kittanning (B ₂) coal.								
3	1' 4"	Uc			S	N5													Frag's. -1/2"; equant, hackly; plt. frgs., leaves, rootlets, <u>Stigmara</u> , a. Weathered Cs.								
2	0' 8"	Coal		0-8	S	N1		+		+		MB	0.6	24.8	58.4	16.2	4.66	12485	Cubic fracture; fusain and pyrite, a. 104-C-1, Lower Kittanning (B ₁) coal.								
1		Cl sh			S	N3													Fissile; beds 1/8" - 1/4"; chippy; plt. frgs., leaves, a.								



SITE/STATION NO. 33-2		LAT °N. 41°18'48"		COUNTY Clarion		WEATHERING fresh		JOINTING N25°W, N65°E, N78°W, E-W.													
COAL SAMPLE NO.(S)		LONG °W. 79°32'07"		TWP Ashland		COMMENTS															
COMPANY A. A. Siegel Coal Co.		GEOLOGIST wee		15' QUADRANGLE Kossuth																	
MINE Siegel #5		PERMIT 8-4C		DATE 5-16-66		7 1/2' QUADRANGLE Oil City															
COAL(S) REPORTED Clarion coal.																					
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	58'																				
6	14' 0"	Ss				N8												Beds 1/2" - 3"; planar cross-beds with top and bottom truncated, cross-bed dip SSW-W, no obvious dip to cross-beds sets; very fine- to fine-grained, clay matrix; Fe-stain.			
5	0" - 6"	Coal			U	N1						B						Shaly; coal occasionally cut out by Unit 6.			
4	39' 0"	Ss			S	N6 - N7												Mica 1 - 2, c; branches, trunks, a; mostly fine-grained, clay matrix. Strongly contorted and imbricated lenses, wedges and beds of Ss to 8' thick. Major lenses dip to N, channel axis E-W. Locally coals to 8" thick x 20' long between Ss lenses. Some beds of lss st. Upper 10' - 15' grades locally to a St sh; N3 - N4, hackly; plt. frgs.			
3	1' 1"	Bone			U	N1						D						Pyrite lenses often cut out by Ss (Unit 4).			
2	3' 10"	Coal	2' 2 1/2"	19 1/2-46	S	N1						MD						Blocky fracture; pyrite partings - 1/4", c (to 1",r).			
		Fusain Sh, Pyrite	0' 1"		S	N1 - N3												Parting.			
		Coal	0' 3 1/2"	15-18 1/2	S	N1			+		+	D						Blocky fracture.			
		Coal	1' 3"	0-15	S	N1						B						Partings, r; persistent 1/2" -1" vitrain-pyrite parting at top. Unit 2: Clarion coal.			
1		Uc			S	N7												Silty.			

SITE/STATION NO.		33-3		LAT °N.		41°16'46"		COUNTY		Clarion		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)		33-C-3		LONG °W.		79°32'27"		TWP.		Ashland		COMMENTS									
COMPANY		Kahle Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Oil City											
MINE		Buzard - Kahle		PERMIT		66-1 (A)		DATE		6-22-67		7 1/2' QUADRANGLE		Kossuth							
COAL(S) REPORTED		Clarion.																			
S T R A T I G R A P H I C D A T A																					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							% ABUN- DANCE			THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
Coals analyzed M/7-7-69																					
T	32' - 37'																				
7	3' 0"	Sh														Carbonaceous. Inaccessible.					
6	3' - 8'	Ss			?	5Y 8/1										Beds 3" - 2'; blocky; large-scale cross-bedding dips N10°E; branches, trunks, a; medium-grained, fair sorting, angular, clay matrix, dark minerals, c, clay galls, r; coaly material in lower 3', a.					
5	7' 0"	Cl sh	1' 0"		S	5Y 3/1										Silty; subfissile; beds 1/8" - 1/2"; hackly; siderite nodules to 3".					
		Ss	6' 0"		G S	N4 - N6										Fissile; beds 1/2" - 3"; flaggy, chippy, slabby; current ripples; mica l, c; silt to very fine-grained, clay matrix. Interbedded with thin beds of St sh & Sts.					
4	3' 6"	Ss			G	N8										Beds 3" - 1'; slabby, blocky; mica l, c; very fine-grained, excellent sorting, clay matrix.					
3	13' 0"	lss sh	5' 0"		S											Fissile; beds 1/2" - 3"; slabby; plt. frgs., leaves.					
		lsc sh			G											Fissile; beds 1/4" - 1/2"; chippy; plt. frgs., leaves.					
		Cl sh	8' 0"		G	5Y 2/1- N5										Fissile, subfissile; siderite nodules in lower 5', a.					
2	2' 4"	Coal	0' 4"	24-28	S	N1		+			+	MD	1.6	39.7	45.3	13.4	5.08	12753	Bony; cubic fracture; pyrite lenses, r.		
		Coal	0' 8"	16-24		N1		+				+	MB	2.3	38.1	50.6	9.0	6.51	13068	Cubic to rough fracture; pyrite-fusain partings, r; pyrite lenses to 1 1/2" at bottom.	
		Coal	0' 7"	9-16		N1		+				+	MB	1.5	43.7	51.2	3.5	2.64	14278	Cubic fracture; pyrite-fusain parting at bottom.	
		Coal	0' 9"	0-9		N1		+				+	B	1.7	41.0	50.3	6.9	3.71	13649	Cubic fracture.	
														1.8	40.7	49.9	7.6	4.44	13512	Seam average of 33-C-3, Clarion coal.	
1		Cl sh			S	N2													Silty; subfissile; beds 1/4" - 1/2"; hackly; carbonaceous.		

SITE/STATION NO.		33-4		LAT °N.		41°16'54"		COUNTY		Clarion		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		33-C-4		LONG °W.		79°31'43"		TWP		Ashland		COMMENTS		"Lower Clarion" (10" - 15" thick) reported to be 25' below unit 2.							
COMPANY				A.P. Weaver and Sons				GEOLOGIST tmb		15' QUADRANGLE		Oil City									
MINE Lewis strip		PERMIT 144-7		DATE 8-10-67		7 1/2' QUADRANGLE		Kossuth													
COAL(S) REPORTED				Upper Clarion.																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	28' - 34'																				
4	20' 0"	Ss				N3 - N7												Beds 1/2" - 4'; flabby, slabby, blocky; current ripples; mica 1 - 3, a; fine-, medium- and coarse-grained, fair to good sorting, clay matrix, dark minerals; thinner bedded upward; highly variable with coal stringers; a clay-chip conglomerate in middle. Unit 4: A channel filling.			
3	6' - 12'	Cl sh				N4												Slightly silty upward; subfissile; beds 1/2" - 3"; hackly, rubbly; siderite to 1 1/2", a; spores? at bottom.			
2	1' 11"	Coal	1' 1"	10-23		N1	+				+	MB	1.8	40.1	51.0	7.1	4.28	13625	Pyrite partings to 1/2", r.		
		Coal	0' 10"	0-10		N1	+				+	MD	2.0	38.6	49.8	9.6	5.06	13141	Knife-edge fusain-pyrite partings, c; pyrite lenses to 1", r.		
													1.9	39.4	50.5	8.2	4.62	13414	Seam average of 33-C-4, Upper Clarion coal.		
1		Uc				N3 - N4													Slightly silty; subfissile; frag's. 1/2"±; hackly, rubbly.		

SITE/STATION NO. 33-5			LAT °N. 41°19'04"			COUNTY Clarion			WEATHERING fresh			JOINTING S 30° W, S 45° W.									
COAL SAMPLE NO(S) 33-C-7			LONG °W. 79°03'01"			TWP. Elk			COMMENTS Unit 3 contacts Unit 2 unconformably and Unit 1												
COMPANY A. P. Weaver & Sons			GEOLOGIST adg			15' QUADRANGLE Oil City			conformably.												
MINE Pitch Pine		PERMIT 144-12	DATE 6-27-68			7 1/2' QUADRANGLE Kossuth			Unit 4 contacts Units 2 - 3 unconformably.												
COAL(S) REPORTED Clarion																					
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	34'																	Coal analyzed M/7-25-69			
4	15'+	Ss				N7												Subfissile; flaggy; mica 2, a; branches; fine-grained; clay matrix; beds 3" - 1'.			
3	0' - 15'	Cl sh			U	N3												Silty; subfissile; hackly; plt. frgs., beds 1/32" - 1/8".			
2	0' - 9'	Ss			U	N7												Mica 2, a; branches; fine-grained; clay matrix; solid.			
1	3' 7"	Bone	0' 10"		S													Not sampled.			
		Coal	2' 9"	0-33	S	N1	+			+	MD	2.0	42.3	50.3	5.4	3.81	13840	Pyrite. 33-C-7, Clarion coal.			
Note:																		Above in a new cut is plastic clay; then 28" of coal (not sampled or examined); overlain by 6' of Ss, N7, fine-to very fine-grained; beds 1/4" - 1/2"; micro cross bedding, mica, a. Very complicated stratigraphy, as in one place almost all Ss, but near new cut mostly Cl sh.			

SITE/STATION NO.	34-3	LAT °N.	41°02'56"	COUNTY	Clarion	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO(S)	34-C-3	LONG °W.	79°32'08"	TWP.	Toby	COMMENTS			
COMPANY	C. & K. Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Foxburg				
MINE	Fowler	PERMIT	4-29	DATE	7-20-66	7 1/2' QUADRANGLE	Rimersburg		
COAL(S) REPORTED	Upper Freeport (E).								

S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES					C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
1	6'																					
4		cover																Soil.				
3	15' 0"	Cs				N5												Beds 1/2" - 3"; hackly; siderite nodules; fossils 1' 6" above bottom.				
2	5' 5"	Coal	1' 2"	51-65	S	N1			+		+	+						Shaly.				
		Coal	3' 7"	8-51		N1			+		+	+	MD	1.9	32.0	60.2	5.9	1.23	13460	34-C-3, Upper Freeport (E) coal.		
		Bone	0' 8"																			
1		Uc			S																	

SITE/STATION NO.		34-6		LAT °N.		41°10'00"		COUNTY		Clarion		WEATHERING		fresh		JOINTING							
COAL SAMPLE NO.(S)		34-C-6, -7		LONG °W.		79°34'17"		TWP.		Licking		COMMENTS											
COMPANY C. & K. Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Foxburg													
MINE C. & K. #38		PERMIT 4-26		DATE 7-20-66		7 1/2' QUADRANGLE		Knox															
COAL(S) REPORTED				Lower Clarion and Middle Clarion coals.																			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S									
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS						
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)			
							% ABUN - DANCE		THICK - NESS		D	S									G	N1	N5
							> 60	30 - 60	15 - 30	0 - 15													
T	49' - 50'																						
8	0' 6"	Coal															Blossom. Upper Clarion coal?						
7	2' - 3'	Uc															Extremely weathered.						
6	25' 0"	Cl sh			G	5Y 4/1											Silty; plt. frgs.; marine fossils, r.						
5	1' 11"	Coal		0-23	S	N1		+		+	D	1.1	37.5	56.4	5.0	2.72	14050 Thickness varies. 34-C-7, Middle Clarion coal.						
4	5' 0"	Uc			S	N5											Solid; <u>Stigmara</u> ; slickensides.						
3	12' 0"	Cs			G	N5											Beds 1/2" - 1"; rubbly; siderite nodules and bands; <u>Lingula</u> sp.						
2	2' 7"	Coal	1' 4 1/2"	14 1/2-31	S	N1		+		+	D	1.3	33.0	54.6	11.1	5.28	12690						
		Sh	0' 1"		N	N1											Parting.						
		Coal	1' 1 1/2"	0-13 1/2		N1		+		+	D	1.2 1.3	33.0 33.0	56.8 55.6	9.0 10.2	3.46 4.46	12950 12807 Pyrite partings. Seam average of 34-C-6, Lower Clarion coal.						
1		Uc			S																		

SITE/STATION NO.	34-7	LAT °N.	41°06'46"	COUNTY	Clarion	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	34-C-9	LONG °W.	79°33'30"	TWP.	Licking	COMMENTS			
COMPANY	Allison Engineering Co.	GEOLOGIST	adg	15' QUADRANGLE	Foxburg				
MINE	Allison	PERMIT	39-13	DATE	7-20-66	7 1/2' QUADRANGLE	Rimersburg		
COAL(S) REPORTED	Clarion.								

S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES					C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE				THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8"- 1/4"										
T	30'																					
5		Ls																	Vanport. Weathered.			
4	8' 0"	Ss				N7													Very fine-grained.			
3	18' 0"	Cs			G	N4													Beds 1/2" - 3"; marine fossils; grades upward to Sts.			
2	4' 2"	Coal	0' 8"	42-50	S	N1				+		+	+	D								
			0' 1"																Parting.			
		Coal	2' 0"	17-41		N1				+		+	+	D								
		Sh & pyrite	0' 4"																Parting.			
		Coal	1' 1"	0-13		N1				+		+	D	1.3	35.2	57.5	6.0	2.09	13920	34-C-9, Clarion coal. Channel sample of entire seam.		
1	5'±	Uc																				

SIT	COA	COA	MIN	COA	GR	NUMBER

SITE NO. 34 H

SITE/STATION NO.		34-12		LAT °N.		41°06'28"		COUNTY		Clarion		WEATHERING		JOINTING							
COAL SAMPLE NO(S)		34-C-13		LONG °W.		79°30'26"		TWP.		Sligo Boro.		COMMENTS									
COMPANY Allison Engineering Co.				GEOLOGIST tmb		15' QUADRANGLE		Foxburg													
MINE McCall & Stewart				PERMIT 39-15		DATE 8-15-67		7 1/2' QUADRANGLE		Rimersburg											
COAL(S) REPORTED				Upper Clarion.																	
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE		THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	30'																				
4	3' 0"	Uc				5Y 8/1												Frag's. -1/2"; hackly, rubbly; weathered.			
3	23' 0"	Ss	5' 0"			10YR 8/2												Beds 3" - 1'; blocky; mica 1, r; very fine-to fine-grained, excellent sorting, clay matrix.			
		lss sh	10' 0"			N7											Fissile; beds 1/4" - 3"; platy, flaggy; mica 2, c.				
		lsc sh				N5										Fissile; beds 1/4" - 3"; platy, flaggy; mica 2, c. lsc sh, lss sh and some Ss stringers are interbedded					
		Cl sh	8' 0"			N4 - N5												Locally silty; fissile, subfissile; beds 1/4" - 1/2"; platy, chippy, hackly; siderite nodules to 2" upward.			
2	1' 7"	Coal	0' 3"	16-19		N1			+		+	+	D	5.8	31.5	49.6	13.1	3.48	13044 Knife-edge bone partings, c.		
		Coal	0' 4"	12-16		N1			+			+	+	MD	1.2	41.9	46.9	10.0	2.66	13407 Knife-edge bone partings, c; 1/4" - 1/2" pyrite parting at top.	
		Coal	0' 2 1/2"	9 1/2-12		N1														Bony. Not sampled.	
		Coal	0' 9 1/2"	0-9 1/2		N1	+					+		MB	1.2	39.4	49.1	10.3	2.49	13286 Knife-edge pyrite, with some fusain, partings, r.	
															2.0	38.6	48.6	10.7	2.71	13271 Seam average of 34-C-13, Upper Clarion coal.	
1	2'+	Uc				N4													Frag's. -1/2"; hackly; rootlets, c.		

SITE/STATION NO.		34-13		LAT °N.		41°06'36"		COUNTY		Clarion		WEATHERING		JOINTING							
COAL SAMPLE NO(S)		34-C-14		LONG °W.		79°30'12"		TWP		Sligo Boro.		COMMENTS									
COMPANY Allison Engineering Co.				GEOLOGIST tmb		15' QUADRANGLE		Foxburg													
MINE McCall & Stewart		PERMIT 39-15		DATE 8-15-67		7 1/2' QUADRANGLE		Rimersburg													
COAL(S) REPORTED Lower Kittanning (B).																					
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
NUMBER	GROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL					PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
							ANTHRAXYLON					ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
							% ABUN - DANCE	THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
T	42'																			Coals analyzed M/7-7-69	
8	5' 0"	St sh				10YR 7/4														Fissile; beds 1/2" - 3"; platy, chippy; limonite concretions, r.	
7	8' 0"	Cl sh				N2 - N4														Subfissile; beds 1/8" - 1/4"; chippy, hackly.	
6	5' 0"	Cl sh			G	5GY 6/2 -5Y 7/2														Slightly silty; fissile; beds 1/4" - 1/2"; platy, chippy; plt. frgs., a.	
5	5' 0"	Ss			S	10YR 7/4														Beds 3" - 1'; slabby; fine-to medium-grained.	
4	8' 0"	St sh			G	N5														Beds 1/8" - 1/2"; chippy; plt. frgs., c.	
		lsc sh			G	N5														Fissile; beds 1/8" - 1/2"; platy.	
		Cl sh			G	N5														Fissile; beds 1/8" - 1/2"; platy.	
3	8' 0"	Cl sh			G	N3 - N4														Unit 4: Grades upward, as shown.	
2	2' 11"	Coal	0' 6"	29-35	S	N1				+	+	+	VD	1.1	39.5	51.4	8.0	1.54	13746	Bony.	
		Coal	0' 6"	23-29		N1	+					+	+	D	1.2	41.3	51.6	5.8	1.92	13988	Pyrite at bottom, a.
		Coal	1' 3"	8-23		N1	+					+	+	MD	1.2	40.5	53.0	5.2	1.24	14084	Rough fracture; 1" bony zone at bottom.
		Coal	0' 8"	0-8		N1	+					+		MB	2.2	31.2	45.4	21.2	2.88	11156	Rough fracture; 1/2" thick Cl sh 4" from bottom.
																				Seam average of 34-C-14, Lower Kittanning (B) coal.	
1		Uc			S	N6														Very soft; frag's. - 1/2"; hackly.	
	</																				

SITE/STATION NO.		34-14		LAT °N.		41°06'07"		COUNTY		Clarion		WEATHERING		fresh		JOINTING						
COAL SAMPLE NO(S)		34-C-15, -16		LONG °W.		79°35'20"		TWP.		Perry		COMMENTS		See Site 34-15 for continuation of stratigraphic column (units 7 - 10).								
COMPANY		C. & K. Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Foxburg												
MINE		PERMIT 4-44		DATE		7-17-68		7 1/2' QUADRANGLE		Rimersburg		Interval from Unit 6 (Site 34-14) to Unit 7 (Site 34-15) is 32'± by hand level.										
COAL(S) REPORTED		Lower Clarion, Upper Clarion* see note																				
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL ANTHRAXYLON						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE				THICK - NESS		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"
T	85' - 91'																		Coals analyzed M/7-25-69			
6a	32' 0"	cover																	Soil.			
6	0' - 6'	Ls			S														Vanport.			
5	23' 0"	Cl sh			S	N2													Fissile; beds 1/8"-1/4"; platy; siderite nodules, c; marine fossils 3' above bottom; upper 12' becomes silty.			
4	1' 4 1/2"	Bone	0' 5"		S	N1			+			+	D	1.3	10.2	5.4	83.1	2.30	1281			
		Coal	0' 11 1/2"	0-11 1/2	S	N1	+			+	MB	1.5	40.9	52.1	5.5	2.03	13938		Slightly bony; pyrite streaks.			
														1.4	31.6	38.0	29.0	2.11	10102	Seam average of 34-C-16, Upper Clarion coal.*		
3	5' 6"	Uc			S	5Y 4/1																
		Sts			G	N6 - N7														Rubbly; grades upward to Uc, 5Y 4/1.		
2	20' 0"	Cl sh			S	N2														Subfissile; beds 1/4" - 1/2"; hackly, siderite nodules, a; upper 2' - 3' contains sandstone laminae.		
1	3' 5"	Coal	1' 2"	27-41	S	N1			+		+	+	MB	1.7	38.3	51.1	9.0	5.06	13502	Pyrite; bony streaks.		
		Sh	0' 1 1/2"		S															Parting: tough.		
		Coal	2' 1 1/2"	0-25 1/2	S	N1	+			+	+	MB	1.8	48.5	42.7	7.0	4.16	13744	Pyrite; thin shale partings.			
														1.8	44.9	45.6	7.7	4.48	13658	Seam average of 34-C-15, Lower Clarion coal.*		
																			*Note: Survey designation; coals reported only as Clarion.			

SITE/STATION NO.		34-15		LAT °N.		41°06'03"		COUNTY		Clarion		WEATHERING		fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
COAL SAMPLE NO(S)		34-C-17		LONG °W.		79°35'24"		TWP		Perry		COMMENTS		See Site 34-14 for preceding stratigraphic column (units 1 - 6). Interval to unit 6, of Site 34-14, is 32'± by hand level.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
COMPANY		C. & K. Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Foxburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
MINE		PERMIT		4-44		DATE		7-17-68		7½' QUADRANGLE		Rimersburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
COAL(S) REPORTED		Lower Kittanning (B).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	CCAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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SITE/STATION NO.		34-16		LAT °N.		41°09'33"		COUNTY		Clarion		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO(S)		34-C-18		LONG °W.		79°33'41"		TWP.		Licking		COMMENTS									
COMPANY		C. & K. Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Foxburg		rusty colored clay, possibly ferriferous iron ore									
MINE		Davis		PERMIT		4-46		DATE		6-27-68		7 1/2' QUADRANGLE		Knox		from Vanport horizon? Samples of ore collected.					
COAL(S) REPORTED		Clarion																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	35'																	Coal analyzed M/7-25-69			
4	9'+	Ss				N7												Fissile; flaggy; mica 2, r; fine-grained; clay matrix; beds 1/2" - 3".			
3	18' 6"	Cl sh			G	N4												Silty; fissile; platy; thin Ss laminae in upper 5'; beds 1/4" - 1/2".			
2	5' 0"	Cl sh			G	N2												Subfissile; hackly; siderite nodules; marine fossils collected 4' above bottom; beds 1/8" - 1/4".			
1	2' 7 1/2"	Bone Coal	0' 8 1/2" 1' 11"	0-23	S	N1 N1												Not sampled.			
							+				+	MD	1.3	40.4	51.6	6.8	2.06	13792 Pyrite. 34-C-18, Clarion coal.			

[illegible]

SITE/STATION NO.	43-1	LAT °N.	41°19'18"	COUNTY	Clarion	WEATHERING	fresh	JOINTING	N75°E, N20°W (faces curved).
COAL SAMPLE NO.(S)		LONG °W.	79°16'48"	TWP.	Farmington	COMMENTS			
COMPANY	Zacherl Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Tionesta				
MINE	Zacherl	PERMIT	73-4	DATE	5-17-66	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Clarion.								

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						A N T H R A X Y L O N						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% A B U N - D A N C E				T H I C K - N E S S										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	41'																				
5	4' 0"	St sh				N2												Beds 1/8" - 1/4"; hackly.			
4	1' 0"	lss st			G													Solid; silt to very fine-grained.			
3	33' 0"	St sh			G	N3												Beds 1/8" - 1/4"; chippy; siderite nodule bands in lower 15', fewer upward; leaves, r; becomes N5 and more sandy upward, with some sand laminae in upper 10'.			
2	2' 10"	Coal	0' 11"	23-34	S	N1							MB					Blocky fracture;bony zones, r; thin partings, c.			
		Sts	0' 1"		S												Parting, pyrite.				
		Coal	1' 10"	0-22	S	N1							B				Blocky fracture;nonpersistent pyrite partings to 1". Unit 2: Clarion coal.				
1		Uc			S	N4															
	Note:																	Vanport limestone occurs a few feet above Unit 5.			

SITE/STATION NO.		43-2		LAT °N.		41°15'50"		COUNTY		Clarion		WEATHERING		fresh		JOINTING				
COAL SAMPLE NO(S)		43-C-1		LONG °W.		79°21'02"		TWP.		Highland		COMMENTS								
COMPANY Zacherl Coal Co., Inc.				GEOLOGIST tmb		15' QUADRANGLE		Tionesta												
MINE Zacherl #1 strip				PERMIT 73-1		DATE 6-22-67		7 1/2' QUADRANGLE		-										
COAL(S) REPORTED				Clarion.																
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE													
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
T	42' - 47'																			
4	30' - 33'	Ss				N7												Beds 3" - 4' (thin upward); slabby, blocky; channel axis N20 E; branches, trunks near bottom, a; medium-grained, good sorting, angular to subangular, clay matrix, dark minerals, r, clay galls at bottom, a. Channel deposit with discontinuous coals to 1' laced within lower 10'.		
3	6' - 8'	Cl sh			S	N4												Subfissile; beds 1/4" - 3"; chippy, hackly, rubbly; siderite nodules to 3", r; leaves?, r; becomes Cs upward.		
2	5' 2" to 5' 10"	Coal	0' 8"	62-70	S	N1			+		+	VD	1.3	35.5	42.6	20.6	7.42	11616	Bony; 1" pyrite-clay parting at bottom (included in 8").	
		Coal	1' 1"	49-62		N1	+				+	MB	1.4	39.3	50.9	8.4	5.04	13455	Pyrite partings, c.	
		Coal	0' 8"	41-49		N1	+				+	MB	1.6	37.7	48.6	12.1	8.02	12390	Knife-edge partings, c; 1/2" bone at bottom (included in 8").	
		Coal	1' 0"	29-41		N1	+				+	D	3.0	37.8	49.5	9.7	4.80	12890	Pyrite partings, c; 1/2" pyrite parting at bottom (included in 1').	
		Coal	0' 11"	18-29		N1			+		+	MD	1.8	30.4	42.9	24.8	5.92	10237	Pyrite parting and bone at bottom.	
		Coal	0' 8"	10-18		N1			+		+	D	1.5	26.9	37.0	34.6	3.60	9051		
		St sh	0" - 8"		S	N4													Parting; beds 1/2" - 3", frag's. + 1/2"; rubbly; mica 2, r; rootlets, c.	
		Coal	0' 2"	0 - 2	S	N1							1.8	35.0	45.9	17.3	5.68	11777	Not seen or sampled. Thickness reported by operator. Seam average of 43-C-1, Clarion coal.	
1		Uc			S													Reported by operator.		

SITE/STATION NO.	43-3	LAT °N.	41°18'30"	COUNTY	Clarion	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	43-C-2, -3	LONG °W.	79°17'49"	TWP.	Farmington	COMMENTS	Locally there is an undesignated coal, possibly the		
COMPANY	Harold A. Siegel Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Tionesta	Lower Kittanning (B), at from 15' - 20' above the			
MINE	Thompson-Siegel	PERMIT	8-5A	DATE	6-25-68	7 1/2' QUADRANGLE	-	Vanport limestone.	
COAL(S) REPORTED	Lower Clarion, Upper Clarion.								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN- DANCE				THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8"- 1/4"										
T	43' - 46'																	Coals analyzed M/7-25-69				
7		cover																Soil.				
6	0' - 3'	Ls																Vanport. This limestone was at the top of the high-wall, and is used to neutralize acid mine water.				
5	20'+	Cl sh			S	N4												Silty; subfissile; rubbly; siderite nodules; fossils collected; beds 1/4" - 1/2".				
4	1' 4 1/2"	Bone Coal	0' 3 1/2" 1' 1"	0-13	S			+			+	MD	1.4	39.8	51.3	7.5	2.90	13696	Not sampled. Bony. <u>43-C-3</u> , Upper Clarion coal.			
3	15'	Cl sh			S	5Y 2/1													Subfissile; hackly; siderite nodules; beds 1/8" - 1/4".			
2	4' 4"	Cl sh			S	N3													Fissile; platy; siderite nodules; <u>Lingula</u> sp. and <u>Orbiculoidea</u> sp. through unit to within 6" of bottom; beds 1/32" - 1/8".			
1	2' 5 1/2"	Bone	0' 1 1/2"		S														Pyrite. Not sampled.			
		Coal	1' 5"	11-28		N1		+			+	MD	1.4	38.3	52.2	8.0	2.74	13454	Bony; pyrite.			
		Bone	0' 2"																Not sampled.			
		Coal	0' 9"	0-9		N1		+			+	MD	1.6	36.4	52.9	9.0	2.35	13260	Pyrite.			
													1.5	37.7	52.5	8.4	2.60	13387	Seam average of <u>43-C-2</u> , Lower Clarion coal.			
	</																					

SITE/STATION NO.	43-4	LAT °N.	41°15'40"	COUNTY	Clarion	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	43-C-4	LONG °W.	79°19'44"	TWP	Highland	COMMENTS	Operator says Vanport limestone present in nearby		
COMPANY	A. P. Weaver & Sons	GEOLOGIST	adg	15' QUADRANGLE	Tionesta	mine.			
MINE	Miola Strip	PERMIT	144-8	DATE	6-25-68	7 1/2' QUADRANGLE	-	Unit 5 locally contacts both Units 3 - 4.	
COAL(S) REPORTED	Clarion								

GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				COMMENTS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	PROXIMATE (%)				
							% ABUN - DANCE			THICK - NESS				MOISTURE	VOLATILE	FIXED CARBON		ASH
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						
T	30' - 51'																Coal analyzed M/7-25-69	
5	20' 0"	Ss				N7											Subfissile; rubbly; cross-bedding; mica l, c; fine-grained; beds 3" - 2'.	
4	0' - 12'	Ss			U	N4											Subfissile; rubbly; mica l, c; very fine-grained; beds 1/2" - 3".	
3	3' - 6'	Ss			U	N8											Subfissile; rubbly; siderite?; branches; fine- to coarse-grained; clay matrix; coaly material, a; sampled; beds 1' - 2'.	
2	4' 6" - 10'	Cl sh			S	N4											Subfissile; hackly; siderite nodules, a; beds 1/8" - 1/4".	
1	3' 2"	Bone Coal	0' 7" 2' 7"	0-31	S		+				+	D MD	1.4 40.3 53.0 5.4 3.21			13938	Pyrite. Not sampled. Bony; pyrite. <u>43-C-4</u> , Clarion coal.	

SITE/STATION NO.	43-5	LAT °N.	41°21'15"	COUNTY	Clarion	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	43-C-5	LONG °W.	79°25'33"	TWP	Washington	COMMENTS	Highwall inaccessible.		
COMPANY	A. P. Weaver & Sons	GEOLOGIST	adg	15' QUADRANGLE	Tionesta	Underclay exposed below the coal.			
MINE	Fecenmyer	PERMIT	144-11	DATE	6-25-68	7½' QUADRANGLE	-		
COAL(S) REPORTED	Clarion								

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	• COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
T	22'																	Coals analyzed M/7-25-69			
5	8'+	Ss			S	5Y 7/2												Fissile; platy; cross-bedded; mica l, a; very fine-grained; beds 1/2" - 3".			
4	10' 0"	Cl sh			G	N4												Fissile; platy; siderite bands, nodules, c; limestone? concretions -1/4"; beds 1/8" - 1/4".			
3	2' 0"	St sh			S	N3												Fissile; platy; leaves, branches; beds 1/32" - 1/8".			
2	2' 2"	Coal	1' 6"	8-26	S	N1	+			+	MD	1.4	37.7	52.7	8.2	1.80		13260	Bony; pyrite.		
		Bone	0' 1"																Tough.		
		Coal	0' 7"	0-7	S	N1	+			+	MD	1.3	37.9	50.4	10.4	2.46		12897	Pyrite.		
												1.3	37.8	52.0	8.8	2.00		13158	Seam average of 43-C-5, Clarion coal.		
1		Uc																			

SITE
COAL
COMP
WINE
COAL
GRO
N E S C N

SITE/STATION NO.	44-1	LAT °N.	41°06'14"	COUNTY	Clarion	WEATHERING	JOINTING
COAL SAMPLE NO.(S)	44-C-1	LONG °W.	79°21'38"	TWP	Limestone	COMMENTS	30' - 40' interval between Vanport Ls to Lower Kittanning (B) coal. 60' - 65' interval between Lower Kittanning (B) coal (unit 2, Site 44-1), and Middle Kittanning (C) coal.
COMPANY	Allaman Mining Co.	GEOLOGIST	adg	15' QUADRANGLE	Clarion		
MINE	PERMIT comments	DATE	7-19-66	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Lower Kittanning (B).					Permit: 51-2A & 51-2 (A2)	

S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		L T H O L O G Y	I N T E R V A L (S U B - U N I T)	C O A L B E N C H E S C U M U L A T I V E , I N I N C H E S	C O N T A C T (U P P E R)	C O L O R (M U N S E L L)	C O A L							P R O X I M A T E (%)				S U L F U R (%)	A I R D R Y I N G L O S S (%)	B R I T I S H T H E R M A L U N I T S								
N U M B E R	I N T E R V A L (T O T A L)						A N T H R A X Y L O N						A T T R I T U S L U S T E R	M O I S T U R E	V O L A T I L E	F I X E D C A R B O N	A S H											
							% A B U N - D A N C E				T H I C K - N E S S																	
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"					
T	22'																											
4		cover																Spoils.										
3	20' 0"	Cs				N4												Beds 1/2" - 3"; hackly; siderite nodules; marine fossils at bottom, some pyritized.										
2	1' 6"	Coal		0-18	S			+		+	+	D	0.8	34.1	51.5	13.6	3.42	12680	Bony. <u>44-C-1</u> , Lower Kittanning (B) coal.									
1		Uc			S																							

SITE/STATION NO.		44-2		LAT °N.		41°05'55"		COUNTY		Clarion		WEATHERING		JOINTING									
COAL SAMPLE NO.(S)		44-C-2		LONG °W.		79°21'37"		TWP.		Limestone		COMMENTS		Permit: 51-2A & 51-2 (A2).									
COMPANY		Allaman Mining Co.		GEOLOGIST		adg		15' QUADRANGLE		Clarion													
MINE		PERMIT comments		DATE		7-19-66		7 1/2' QUADRANGLE		-													
COAL(S) REPORTED		Upper Freeport (E).																					
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN - DANCE																
							THICK - NESS																
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"														
T	36'																						
5	20' 0"	Ss																Beds 2' - 4'; medium- to coarse-grained; clay matrix and dark minerals, c.					
4	1' 6"	Ss			U													Good to poor sorting; coaly streaks.					
3	10' 0"	Cl sh			S	5GY 3/2												Silty; beds 1/4" - 1/2"; rubbly; siderite nodules.					
2	4' 8"	Coal	1' 4"	40-56	S								1.5	32.3	57.5	8.5	1.27	13220	Bony streaks.				
		Coal	3' 4"	0-40		N1		+			+	+	MD	1.7	33.1	59.3	5.9	1.37	13440	Sulfur flowers on weathered surface.			
														1.6	32.9	58.8	6.6	1.34	13370	Seam average of 44-C-2, Upper Freeport (E) coal.			
1		Uc			S																		

SITE/STATION NO.	44-3	LAT °N.	41°06'02"	COUNTY	Clarion	WEATHERING	JOINTING
COAL SAMPLE NO.(S)		LONG °W.	79°21'36"	TWP.	Limestone	COMMENTS	Permit: 51-2A & 51-2 (A2).
COMPANY	Allaman Mining Co.	GEOLOGIST	adg	15' QUADRANGLE	Clarion		
MINE	PERMIT comments	DATE	7-19-66	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Upper Kittanning (C').						

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)									
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
							% ABUN - DANCE															
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
T	16'																					
6	5' 0"	Cl sh				5Y 4/2																Silty; beds 1/4" - 3"; mica, r.
5	8' 0"	Ss			U	N6 - N7																Beds 1/2" - 1'; mica, r; very fine-grained, clay matrix, c.
4	6' 0"	Cl sh			S																	Beds 1/4" - 1/2"; plt. frgs.; conchostracans.
3	0' 4"	Sh			S	N1																Beds 1/32" - 1/4"; chippy; coaly streaks.
2	1' 5"	Coal		0-17	S	N1																Extremely weathered.Upper Kittanning (C') coal.
1		Uc			S																	

SITE NO. 44-4

SITE NO. 44-5 (page 1)

SITE/STATION NO.	44-5 (page 2)	LAT °N.	41°05'31"	COUNTY	Clarion	WEATHERING	fresh	JOINTING:	N55°W & N10°E (Sh)
COAL SAMPLE NO.(S)		LONG °W.	79°27'14"	TWP.	Piney & Toby	COMMENTS			: N70°W & N20°E (Ss)
COMPANY	Allison Engineering Co.	GEOLOGIST	wee	15' QUADRANGLE	Clarion	Units 1 - 7 (lower stripping), Units 8 - 11 (upper stripping).			
MINE	Curtlsville	PERMIT	39-3	DATE	5-17-66	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"									
T	93'																					
11	17' 0"	Coal				N1												Local coal lenses to 7" thick x 10' - 20' long.				
		Ss				N7, 5Y 6/1											Beds to 1' thick, r; mica l, c; branches, plt. frgs., leaves, trunks, c; very fine- to fine-grained (medium-grained, r).					
		Sts - St sh				N4											Sandy; beds 1/4" - 4"; platy, flaggy. Unit 11: Large-scale cross-bedding consisting of imbricated lenses and beds dipping N30°W, channel axis NE-SW.					
10	0" - 6"	St sh			U	N1												Beds -1/32" - 1/8"; chippy; plt. frgs., leaves, r; cut into by Unit 11.				
9	2' 9"	Coal	2' 2"	7-33	S	N1						MB						Blocky fracture; fine partings, c.				
		Cl	0' 1"														Parting.					
		Coal	0' 6"	0-6		N1						B					Tough. Unit 9: Lower Kittanning (B) coal.					
8	4' 0"	Uc			S																	
7a	28' 0"	cover																Covered interval, but includes several feet of Ss.				
7	6' 0"	Sts				5Y 6/1												Clayey; sandy; flat beds 1/4" - 1/2"; mica l, c.				
6	8' 0"	St sh			G	N2												Beds 1/8" - 1/4"; platy; siderite nodules, r; mica l, c; plt. frgs., leaves, c.				
5	12' 0"	St sh	2' 0"		G	N1												Beds 1/32" - 1/8"; equant; siderite nodules, r; plt. frgs., leaves, r.				
		Cl sh	10' 0"		G	N2											Silty; beds 1/32"-1/8"; chippy (platy upward); siderite bands to 4"; plt. frgs., leaves, r. Unit 5: Gross appearance lighter than Unit 3.					
4	6" - 8"	St sh			G	N2												Beds 1/32" - 1/8"; platy; siderite nodules; brachiopods (<u>Mesolobus</u> sp., <u>Composita</u> sp., and <u>Chonetes</u> sp.) sampled.				

SITE/STATION NO.		44-6		LAT °N.		41°03'01"		COUNTY		Clarion		WEATHERING		fresh		JOINTING		N10°E, N80°W																													
COAL SAMPLE NO.(S)				LONG °W.				79°20'24"				TWP.				Porter				COMMENTS				The stripping to the east was on Bolivar clay and																							
COMPANY				E. C. Dean Constr. Co.				GEOLOGIST				wee				15' QUADRANGLE				Clarion				is permanently exposed. Many other good upper																							
MINE		Yates		PERMIT		379-3		DATE		5-11-66		7 1/2' QUADRANGLE								Freeport (E) exposures in this area.																											
COAL(S) REPORTED				Upper Freeport (E).																																											
S T R A T I G R A P H I C												D A T A												COAL CHEMICAL ANALYSES												C O M M E N T S											
GROSS UNIT		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE, IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL								PROXIMATE (%)				SULFUR (%)				AIR DRYING LOSS (%)				BRITISH THERMAL UNITS															
ANTHRAXYLON												ATTRITUS LUSTER																																			
% ABUN - DANCE																THICK - NESS																															
> 60																30 - 60		15 - 30		0 - 15		> 1/4"														1/8" - 1/4"		1/32" - 1/8"		< 1/32"							
NUMBER	INTERVAL (TOTAL)																																														
T	61'																																														
6	15' 0"	Ss							N8																								1/2" - 2" planar cross-beds in sets 1' - 2' thick, dip N80°E; branches, leaves, r; medium-grained, clay matrix, dark minerals; N9, upward.														
5	1' - 8'	St sh					U		N4 - N6																								Clayey; beds 1/8" - 1/4"; chippy; mica l, c; "lumpy"; sandy Sts beds to 6", r.														
4	18' 0"	Ss					S		N8																								Beds 6" - 4' (mostly 2' - 4'); leaves, c; medium- to coarse-grained (some pebbles), clay-chip Cgl. Coaly stringers cut down to coal in adjacent strip to SSW.														
3	3' 0"	St sh					U		N4																								Sandy; beds 1/8" - 1/4"; chippy; finely divided carbonaceous material along bedding planes. Laterally gradational with part of Unit 2, locally.														
2	23' 0"	St sh					L		N7																								Sandy; beds 1/8" - 1/2"; chippy; plt. frgs., r.														
		Sts							N6																								Sandy; beds 1/2" - 3"; plt. frgs., r.														
		lss sh					G		N5																								Note: Sts and St sh are interbedded.														
		St sh					G		N4																								Beds 1/8" - 1/4"; chippy.														
1	4' 2"	Coal	0' 10"		40-50		S		N1																								Bony.														
		Coal	0' 8"		32-40		S		N1																																						
			0' 1"																																												
		Coal	2' 7"		0-31		S		N1																										Partings, persistent group.												

SITE NO. 44-7 (page 1)

SITE/STATION NO. 44-7 (page 2)			LAT °N. 41°11'01"			COUNTY Clarion			WEATHERING			JOINTING									
COAL SAMPLE NO.(S) 44-C-3			LONG °W. 79°26'07"			TWP. Monroe-Piney			COMMENTS At south end of stripping there is 15' of Cl sh. covered by a coal (Lower Kittanning (B)? coal).												
COMPANY Zacherl Coal Co., Inc.			GEOLOGIST tmb			15' QUADRANGLE Clarion															
MINE Campbell strip			PERMIT 73-6			DATE 8-15-67			7 1/2' QUADRANGLE -												
COAL(S) REPORTED Clarion.																					
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE														
							THICK - NESS														
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"												
T	52'																				
6	5' 0" - 5' 8"	Uc	3' 0"			N8															
		Coal	0" - 8"		S														Frag's. - 1/2"; hackly. "Dirty" and extremely friable; disappears to the north. Lower Kittanning (B)? coal.		
		Uc	2' 0"		S	N8													Frag's. - 1/2"; hackly. Grades laterally to flint clay to the south.		
5	15' 0"	Ss				N8													Beds 1/2" - 2'; flaggy, slabby; mica 2 - 3, a; very fine-to fine-grained, clay matrix.		
		Iss sh				N5													Fissile; beds 1/4" - 1/2"; platy; mica 2 - 3, a. Unit 5: Iss sh and Ss, interbedded; SSW shallow-dipping cross-beds.		
4	18' 0"	Ss			S	N7 - 10R 8/4													Beds 3' - 6'; blocky; large-scale cross-bedding bearing S10°W; mica 2 - 3, c - a; fine, medium- and coarse-grained; coarse-grained has good to excellent sorting, angular to subrounded, clay matrix, some hematite, dark minerals, r. Coaly lenses throughout the lower 3'.		
3	9' 0"	Cl sh	7' 0"		S	N4													Subfissile; beds 1/4" - 3"; platy, chippy, blocky; siderite nodules to 3", upward; marine fossils 5' from bottom, r.		
		Cl sh	2' 0"		G	N3													Slightly silty; fissile; beds 1/4" - 3"; platy, chippy; orbiculoids at bottom.		

SITE/STATION NO.		44-8		LAT °N.		41°13'14"		COUNTY		Clarion		WEATHERING		JOINTING								
COAL SAMPLE NO.(S)		44-C-4		LONG °W.		79°19'37"		TWP.		Clarion		COMMENTS		Coal is broken by what appear to be faults, but may be syndepositional pull-apart of coal during deposition of the heavy channel Ss.								
COMPANY		Zacherl Coal Co., Inc.		GEOLOGIST		tmb		15' QUADRANGLE		Clarion												
MINE		Marcla strip		PERMIT		73-9		DATE		8-16-67		7 1/2' QUADRANGLE		-								
COAL(S) REPORTED		Lower Kittanning (B) and Clarion.																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
Coals analyzed M/7-7-69																						
T	42'																					
6	5' 0"	Cs				N7												Frag's. 1/2"+; dry and "soft"; hackly, rubbly.				
5	2' 0"	Coal		0-24		N1												"Dirty"; discontinuous, laterally cut out by Unit 6. Lower Kittanning (B) coal.				
4	22'+	Ss	10'+			N7												Beds 1/2" - 1'; slabby, blocky.				
		Ss	12' 0"			N7 - N8												Beds 1' - 8'; blocky; large-scale cross-beds bearing NW; several channel axes; branches at bottom, a; coal lenses laced throughout lower 3'. Cuts out unit 3.				
3	0' - 8'	Cl sh				N5												Fissile, subfissile; beds 1/4" - 3"; chippy, rubbly; siderite nodules to 3", c, upward; <u>Lingula</u> sp. and gastropods a few inches from bottom, c.				
2	3' 5"	Coal	0' 7"	34-41		N1	+			+	D	1.2	35.0	47.6	16.3	5.42		12415	Pyrite parting; 1" Cl sh parting at bottom (included in 7").			
		Coal	0' 8"	26-34		N1	+				MD	1.2	36.9	46.4	15.6	5.40		12584	Rough fracture; pyrite partings, c.			
		Coal	0' 11"	15-26		N1	+				MD	1.2	40.2	51.2	7.4	4.97		13805	Rough fracture; pyrite partings, c.			
		Coal	0' 7"	8-15		N1	+			+	MD	1.2	40.9	50.4	7.5	5.22		13770	Rough fracture; knife-edge pyrite partings, c; 1/2" fusain parting at bottom (included in 7").			
		Coal	0' 8"	0-8		N1	+				MB	1.1	36.8	49.5	12.6	7.70		12850	Cubic fracture; knife-edge pyrite partings; upper 1" slightly bony.			
												1.1	38.1	49.2	11.6	5.71		13137	Seam average of 44-C-4, Clarion coal.			
Unit 2: Total coal is cut out by Ss channel to SE.																						
1	2'+	Uc				N3 - N4												Slightly silty in upper 3"; solid, frag's. -1/2"; hackly, rubbly; mica 2, c at top; rootlets, c.				

SITE/STATION NO.	44-9	LAT °N.	41°11'48"	COUNTY	Clarion	WEATHERING	JOINTING
COAL SAMPLE NO(S)	44-C-5	LONG °W.	79°24'08"	TWP	Monroe	COMMENTS	Operator reports 2 coal seams coming together to the south end of stripping, making 6'± coal.
COMPANY	Mays Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	Clarion		
MINE	Mays strip	PERMIT	210-2(A)	DATE	8-16-67	7½' QUADRANGLE	-
COAL(S) REPORTED	Clarion?						Units 1 - 3 are covered, thickness noted by operator.

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE			THICK - NESS			ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
T	33' - 40'																	Coals analyzed M/7-7-69					
6	25'+	Ss	10' 0"			N7												Beds 1/2" - 1'; slabby; medium-grained, excellent sorting, clay matrix.					
		Ss	15' 0"			N7												Beds 2' - 6'; slabby, blocky; large-scale cross-bedding in lower portion bearing N30°W, upper portion S30°E; channel axis? N60°E?; medium-to coarse-grained, good sorting, clay matrix. Unit 6: Cuts into unit 5.					
5	0' - 7'	Cl sh			S	N3 - N4												Fissile; beds 1/4" - 3"; platy, chippy, slabby; siderite nodules to 3", c, upward; plt. frgs., leaves, c; <u>Lingula</u> sp. 3' above bottom, r.					
4	4' 6"	Coal	0' 9"	45-54	S	N1	+			+	D-VD	0.8	38.0	49.1	12.1	2.47		13068	Blocky fracture; knife-edge pyrite partings, r.				
		Coal	1' 0"	33-45		N1	+			+	MD	1.2	39.4	54.8	4.5	3.37		14109	Fusain partings to 1/2", r; fusain-pyrite at bottom.				
		Coal	0' 8"	25-33		N1	+			+	D	1.1	41.4	53.2	4.4	2.79		14230	Cubic to rough fracture; fusain partings to 1/8", c; 1/2" pyrite parting at bottom (included in 8").				
		Coal	0' 10"	15-25		N1	+			+	MD	0.9	41.5	51.9	5.7	3.10		14009	Thin fusain partings, r; bone to 1" at bottom (included in 10").				
		Coal	0' 6"	9-15		N1	+			+	MD -D	0.8	32.3	44.4	22.5	6.64		11301	Cubic fracture; fusain-pyrite partings to 1/4", r.				
		Coal	0' 3"	6-9		N1													Bone.				
		Coal	0' 6"	0-6		N1	+			+	MB MD	1.1	35.7	49.3	13.9	4.50		12657	Cubic fracture; bony partings, r.				
											1.0	38.6	51.1	9.3	3.58		12107	Seam average of 44-C-5, Clarion coal.					
3	2' 0"	Uc			S	N5												Frag's. -1/2"; mica l, c; rootlets, c. Operator noted thickness.					
2	2' 0"	Coal		0-24														Operator noted thickness. Coal mined. Clarion? coal.					
1		Uc			S																		

SITE/STATION NO.		44-10		LAT °N.		41°05'07"		COUNTY		Clarion		WEATHERING		JOINTING									
COAL SAMPLE NO(S)		44-C-6		LONG °W.		79°17'54"		TWP.		Redbank		COMMENTS Units 4 - 6 inaccessible.											
COMPANY Mauersberg Coal Co.				GEOLOGIST tmb		15' QUADRANGLE		Clarion															
MINE Reinsel strip		PERMIT 344-8		DATE 8-16-67		7 1/2' QUADRANGLE		-															
COAL(S) REPORTED Lower Kittanning (B).																							
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN-DANCE		THICK-NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
T	40' - 42'																						Coals analyzed M/7-7-69
6	2' 0"	Coal		0-24																			Middle Kittanning (C) coal blossom.
5	4' 0"	Uc				"Gray"																	Inaccessible.
4	8' - 10'	lsc st lsc sh				5GY 7/1																	Fissile; beds 1/4" - 3"; chippy, slabby. Inaccessible.
3	23' 0"	Cl sh			G	N3 - N4																	Fissile, subfissile; beds 1/8" - 3"; chippy, slabby, hackly; siderite in lower 10', a; fossils sampled 4' above bottom, c.
2	2' 7"	Coal	0' 7"	24-31	S	N1	+				+	D	0.8	38.4	50.2	10.6	0.97	13286	Platy fracture; 1/2" bone at bottom (included in 7").				
		Coal	0' 5"	19-24		N1		+				+	MB MD	0.8	40.6	49.0	9.7	2.89	13479	Cubic fracture.			
		Coal	0' 9"	10-19		N1	+					+	B	0.8	38.7	53.2	7.3	3.75	13770	Pyrite lenses, r; knife-edge pyrite partings, c; fusain at bottom.			
		Coal	0' 10"	0-10		N1	+					+	B	1.0	36.1	55.3	7.6	4.04	13600	Cubic fracture; fusain parting in the middle; knife-edge partings, r.			
														0.9	38.1	52.5	8.5	3.08	13559	Seam average of 44-C-6, Lower Kittanning (B) coal.			
1		Uc			S	N2																	Semi-plastic; subfissile; beds 1/8" - 1/4"; hackly.

SITE/STATION NO.		44-11 (page 1)		LAT °N.		41°00'55"		COUNTY		Clarion		WEATHERING		fresh		JOINTING						
COAL SAMPLE NO (S)		44-C-7, -8		LONG °W.		79°19'22"		TWP.		Porter		COMMENTS										
COMPANY E.C.Dean Const. Co., Inc.				GEOLOGIST tmb		15' QUADRANGLE		Clarion														
MINE Copenhagen strip PERMIT 379-9(A)				DATE 8-16-67		7 1/2' QUADRANGLE		-														
COAL(S) REPORTED				Middle Kittanning (C) and Upper Kittanning (C').																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE		THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
Coals analyzed M/7-7-69																						
		Sts	5' 0"			5Y 7/1													Fissile; beds 1/4" - 3"; chippy, slabby.			
		Ss				5Y 7/4													Beds 3" - 1'; slabby, blocky; leaves, c; very fine-grained, clay matrix. Ss most prominent in lower 1'. Ss and Sts partially covered.			
5	10' 0"	Cl sh	5' 0"			5Y 6/2													Fissile; beds 1/8" - 1/2"; chippy.			
4	14' 0"	Cl sh			G	N3 - N4													Fissile, subfissile; beds 1/8" - 1/4"; chippy; siderite bands comprised of lensoid nodules to 2" thick, more prominent at bottom than upward.			
		Cl sh	2' 6"		S	N3													Subfissile; beds 1/4" - 1/2"; chippy, hackly; mica l, c; marine fossils (mostly brachiopods), c, collected.			
		Cl sh	10' 0"		G	N4													Fissile; beds 1/32" - 1/8"; platy, flaggy; slightly silty in upper few inches.			
3	12' 10"	Cl sh & Siderite	0' 4"		?														Fissile; beds 1/32" - 1/8"; platy; lensoid siderite; partially covered.			
		Coal	1' 4"	10 1/2 - 26 1/2	S	N1	+			++ MD -D	1.0	36.2	60.1	2.8	3.05		14302		Cubic to rough fracture.			
		Cl sh	0' 1/2"			N2													Parting; bony; subfissile; chippy.			
		Coal	0' 5"	5-10		N1	+			MB	0.8	34.0	53.9	11.4	3.75		12899					
2	2' 2 1/2"	Coal	0' 5"	0-5		N1					0.4	40.5	47.9	11.1	0.73		13173		Nonbanded, or bony; blocky.			
											0.8	36.6	56.5	6.0	2.74		13815		Seam average of 44-C-7, Middle Kittanning (C) coal.			
1		Uc			S	5YR 3/1													Fissile; beds 1/8" - 1/4"; chippy, hackly; rootlets, c.			

SITE NO. 44-II (page 2)

SITE/STATION NO. 44-12		LAT °N. 41°12'50"		COUNTY Clarion	WEATHERING fresh	JOINTING
COAL SAMPLE NO(S) 44-C-9		LONG °W. 79°25'48"		TWP. Paint	COMMENTS Rain and mud, evidently no coal shipped for months.	
COMPANY C. & K. Coal Co.		GEOLOGIST adg	15' QUADRANGLE Clarion		* Survey identification; Lower Kittanning (B)?	
MINE Myers-Vosburg	PERMIT 4-45	DATE 6-26-68	7 1/2' QUADRANGLE -			
COAL(S) REPORTED Clarion.*						

COAL(S) REPORTED																		STRATIGRAPHIC DATA																		COAL CHEMICAL ANALYSES										COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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SITE/STATION NO.		44-13		LAT °N.		41°10'57"		COUNTY		Clarion		WEATHERING		fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
COAL SAMPLE NO.(S)		44-C-10		LONG °W.		79°15'35"		TWP.		Clarion		COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
COMPANY		W. P. Stahlman Coal Co., Inc.		GEOLOGIST		adg		15' QUADRANGLE		Clarion		No Vanport limestone present, but occurs as boulders in nearby strippings.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
MINE		Lewis		PERMIT		9-20A		DATE		6-26-68		7 1/2' QUADRANGLE		-		* Identified by mine foreman as Clarion.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
COAL(S) REPORTED		Middle Kittanning (C)*																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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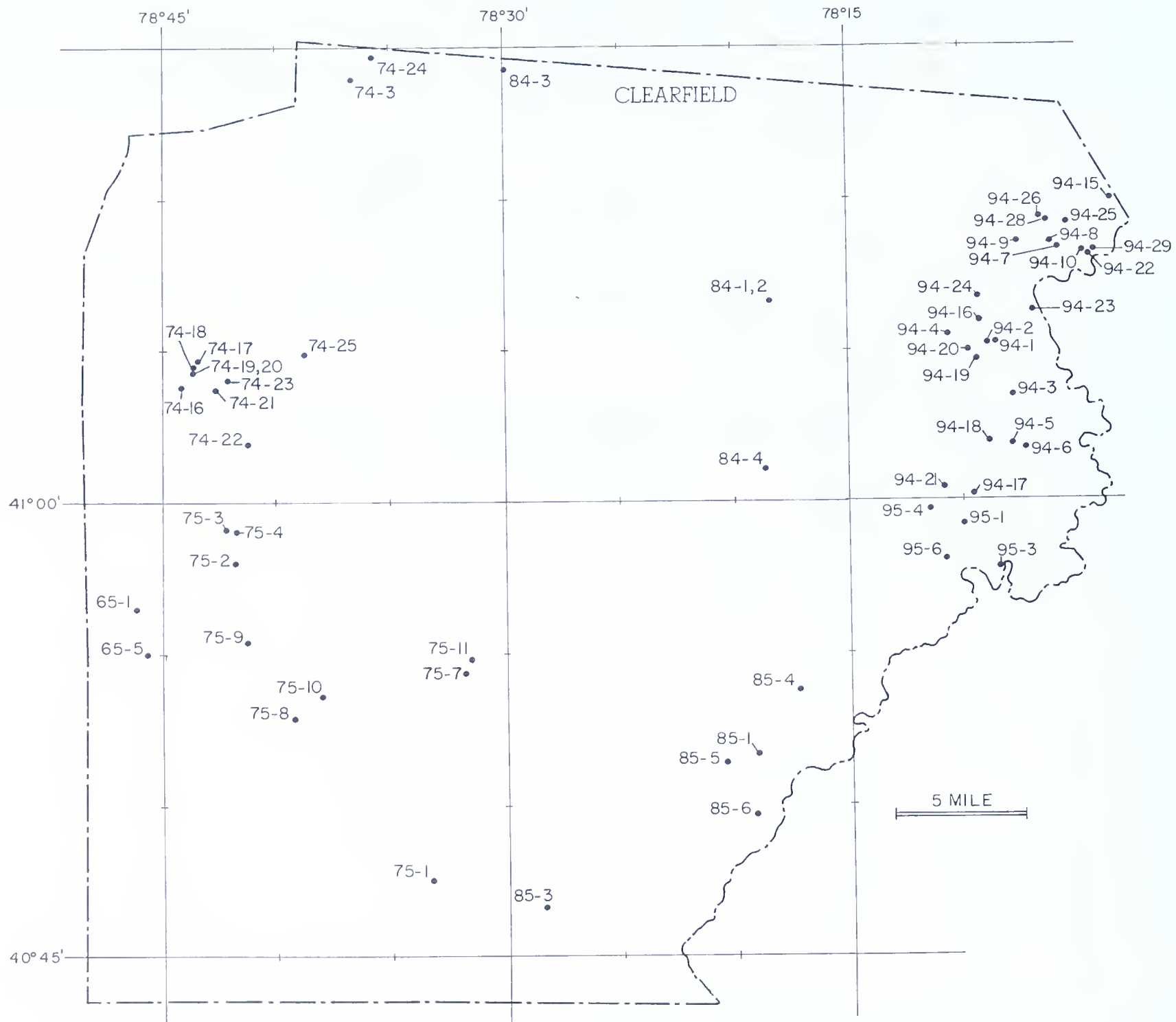
SITE/STATION NO.	44-14	LAT °N.	41°03'46"	COUNTY	Clarion	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	44-C-11	LONG °W.	79°21'47"	TWP.	Porter	COMMENTS	Uncovering Middle Kittanning (C) on eastern edge of		
COMPANY	Ernest C. Dean Contr., Inc.	GEOLOGIST	adg	15' QUADRANGLE	Clarion	strip, too close to crop and too thin to mine.			
MINE	Weeter	PERMIT	379-13	DATE	6-12-68	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 -- 60	15 -- 30	0 -- 15	> 1/4"	1/8" - 1/4"									
T	33'																	Coal analyzed M/7-25-69			
4	24' 0"	Cl sh				N3/N5												Subfissile; hackly, rubbly; siderite, a; lighter color upward.			
3	0' 6"	Siderite			S													Fossils, a.			
2	5' 11"	Cl sh			S	N3												Subfissile; platy; massive; irregular jointing; beds 1/8" - 1/4".			
1	2' 3 1/2"	Coal	0' 4"	23 1/2 - 27 1/2	S	N1												Very shaly; not sampled or examined.			
		Coal	0' 6"	17 1/2 - 23 1/2	S	N1			+		+		MD					Very bony; not sampled.			
		Coal	1' 5 1/2"	0 - 17 1/2	S	N1	+				+		MB	1.2	37.1	55.8	5.9	2.93	13526	Slightly bony; pyrite streaks. 44-C-11, Lower Kittanning (B) coal.	

SITE/STATION NO.		54-5		LAT °N.		41°06'28"		COUNTY		Clarion		WEATHERING		fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
COAL SAMPLE NO.(S)				LONG °W.		79°12'48"		TWP.		Redbank		COMMENTS		This strip is cut into an old deep mine (The Wayland																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
COMPANY		R. D. Baughman Coal Co., Inc.		GEOLOGIST		tmb		15' QUADRANGLE		Brookville				Mine) which became inactive in 1965.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
MINE				PERMIT		151-24		DATE		6-22-67		7 1/2' QUADRANGLE				Name of mine; Shannondale Strip and Auger.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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SITE/STATION NO.	54-6	LAT °N.	41°10'55"	COUNTY	Clarion	WEATHERING	extreme	JOINTING	
COAL SAMPLE NO.(S)	54-C-2	LONG °W.	79°12'38"	TWP.	Clarion	COMMENTS *	Survey identification: Upper Clarion coal?		
COMPANY	W. Paul Glenn	GEOLOGIST	adg	15' QUADRANGLE	Brookville				
MINE	Martz & Corbett	PERMIT	65-4	DATE	6-12-68	7 1/2' QUADRANGLE	-		
COAL(S) REPORTED	Lower Kittanning (B). *								

S T R A T I G R A P H I C D A T A																C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						A N T H R A X Y L O N						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH			SULFUR (%)	AIR DRYING LOSS (%)	
							% A B U N - D A N C E		T H I C K - N E S S													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"
T	14'																	Coals analyzed M/7-25-69				
3		cover																Soil.				
2	10'+	Sh																Chippy; appears to be black shale; extremely weathered and mud-covered.				
1	3' 4"	Coal	1' 1/2"	27 1/2-40		N1		+	+	+	+	MB	1.5	37.9	55.6	5.0	1.44	13938	Bony to very bony.			
		Coal	2' 3 1/2"	0-27 1/2		N1	+		+			B	1.6	34.5	57.7	6.1	1.62	13623	Knife-edge parting at top of bench.			
													1.6	35.6	57.0	5.8	1.56	13721	Seam average of 54-C-2, Upper Clarion? coal.*			



SITE/STATION NO.				65-1		LAT °N.		40°56'28"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING			
COAL SAMPLE NO.(S)						LONG °W.		78°45'55"		TWP.		Bell		COMMENTS		This strip is probably					
COMPANY				Benjamin Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Punxsutawney		Lower Freeport (D) or Upper Freeport (E). Next coal up is at							
MINE				No. 4		PERMIT		comments		DATE		7-1-66		7 1/2' QUADRANGLE		-		least 50' higher.			
COAL(S) REPORTED														Permit: 64-7 and/or 64-2							
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		L T H O L O G Y	I N T E R V A L (S U B - U N I T)	C O A L B E N C H E S C U M U L A T I V E , I N I N C H E S	C O N T A C T (U P P E R)	C O L O R (M U N S E L L)	C O A L						P R O X I M A T E (%)				S U L F U R (%)	A I R D R Y I N G L O S S (%)	B R I T I S H T H E R M A L U N I T S		
N U M B E R	I N T E R V A L (T O T A L)						A N T H R A X Y L O N			T H I C K - N E S S	A T T R I T U S L U S T E R	M O I S T U R E	V O L A T I L E	F I X E D C A R B O N	A S H						
							% A B U N - D A N C E	> 60	30 - 60							15 - 30				0 - 15	
							> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"											
1	33'	Ss	14' 0"			N7												Beds 3" - 4" (lower 3'), 1" (middle 9'), and 3/4" - 1" (upper 2'); plt. frgs., c; very fine-grained, clay matrix.			
		Cl sh	4' 0"		G	N5												Silty; fissile; beds 1/4"-1/2"; chippy; siderite nodules, r; plt. frgs., c.			
		Ss	1' 0"		G	N7												Fissile; beds 1"; mica 1 - 2, c; very fine-grained, clay matrix.			
		Cl sh	3' 0"		G	N5												Silty; fissile; beds 1/4" - 1/2"; chippy; siderite nodules, r.			
		Ss	1' 0"		G	N7												Fissile; beds 1"; mica 1 - 2, c; very fine-grained, clay matrix.			
		Cl sh	3' 0"		G	N5												Silty; fissile; beds 1/4" - 1/2"; chippy; siderite nodules, r.			
		Cl sh	3' 0"		G	N4												Silty; fissile; beds 1/4"-1/2"; chippy; siderite zones, r; plt. frgs., c; fine pyrite specks.			
		St sh	2' 0"		G	N3												Fissile; beds 1/4" - 1/2"; chippy; siderite zones; fine pyrite specks.			
3	31' 2"	St sh	0' 2"		G	N1												Fissile; beds -1/32"; chippy; mica 1, c.			
		Coal	1' 0"	16 1/2-28 1/2	S	N1						B						Cubic fracture; upper 2 1/2" MB; fine partings, r (more common upper 2 1/2").			
		Coal	0' 6 1/2"	10-16 1/2	S	N1						B						Cubic fracture; thin discontinuous shale partings, r. 0"-1/2" shale or fusain-shale parting at top.			
		Coal	0' 6"	4-10	S	N1						B						Cubic fracture; 0"-1/2" shale or fusain-shale parting at top.			
2	2' 4 1/2"	Coal	0' 4"	0-4	S	N1						MB						Cubic fracture; fine pyrite specks. 0"-1/2" shale or fusain-shale parting at top.			
1		Uc			S																

SITE/STATION NO.		65-5 (page 1)		LAT °N.		40°55'08"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING: (coal)		N62°W, N41°E, N52°W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
COAL SAMPLE NO.(S)		65-C-3		LONG °W.		78°45'32"		TWP.		Bell		COMMENTS						: (shale) N29°E, N86°W.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
COMPANY		Benjamin Coal Co., Inc.		GEOLOGIST		gbg		15' QUADRANGLE		Punxsutawney								See Site 65-5 (page 2) for continuing stratigraphic																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
MINE		Benjamin #2		PERMIT		64-14		DATE		8-26-68		7 1/2' QUADRANGLE						units 5 - 9.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	Coals analyzed M/7-25-69																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

SITE/STATION NO.		65-5 (page 2)		LAT °N.		40°55'08"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING: (coal)		N62°W, N41°E.									
COAL SAMPLE NO.(S)		65-C-3		LONG °W.		78°45'32"		TWP		Bell		COMMENTS						: (shale) N29°E, N86°W.									
COMPANY		Benjamin Coal Co., Inc.		GEOLOGIST		gbg		15' QUADRANGLE		Punxsutawney								See Site 65-5 (page 1) for preceding stratigraphic									
MINE		Benjamin #2		PERMIT		64-14		DATE		8-26-68		7 1/2' QUADRANGLE		-				units 1 - 4.									
COAL(S) REPORTED		Lower Freeport (D).																									
S T R A T I G R A P H I C D A T A																				C O A L C H E M I C A L A N A L Y S E S				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SJB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS								
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		% ABUN- DANCE	THICK- NESS	ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH												
							> 60	< 1/4"								1/8" - 1/4"					1/32" - 1/8"	< 1/32"					
																							30 - 60	15 - 30	0 - 15		
I	66'																										
9																			Approximate horizon of the Upper Freeport (E) coal removed by stripping.								
8	11' 0"	Uc	5' 0"			N4													Plt. frgs., +1/2"; hackly, rubbly; plastic at top, silty in places.								
		Cs	3' 0"		G	N4													Beds 1" - 3"; solid; rubbly; siderite nodules to 2", c; silty in places.								
		Sts	3' 0"		G	N5 - 5GY 6/1													Beds 1" - 6"; solid, frag's. +1/2"; rubbly; siderite nodules to 3", c.								
7	17' 0"	lss st	13' 0"		G	N4 - N5													Beds 1/2" - 3"; blocky, rubbly; small-scale cross-bedding; siderite nodules to 10", lenses, bands to 2", c; Ss beds to 3", c (very fine- to fine-grained, fair sorting, subangular, clay matrix).								
		lss st	4' 0"		G	N4 - N5													Beds 1/2" - 2"; blocky, rubbly; siderite nodules to 10", lenses, bands to 2", c.								
6	2' 3"	Cl sh			S	N1 - 5Y 2/1													Beds 1/2" - 1"; platy, equant; carbonaceous; dull.								
5	5' 6"	Uc & Ls	1' 6"		S	N3 - 5Y 4/1													Solid, frag's. -1/2"; hackly; siderite nodules to 8", r; nodular Ls to 8", c; with pods of semi-hard Uc, c.								
		Cs	1' 0"		G	N5 - N6													Solid, frag's. -1/2"; hackly; slickensides.								
		Sts	3' 0"		G	N5													Solid, frag's. -1/2"; hackly; branches, rootlets, trunks, a, and Stigmara, r; coaly laminae, r; irregular bedded; slickensides.								
Note:		See comments.																									

SITE/STATION NO.	74-3	LAT °N.	41°14'03"	COUNTY	Clearfield	WEATHERING	extreme	JOINTING	
COAL SAMPLE NO(S)	74-C-3	LONG °W.	78°36'39"	TWP.	Huston	COMMENTS	Company is a subsidiary of P. & N. Coal Co.		
COMPANY	Compass Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Penfield				
MINE	Wilson Run strip	PERMIT	33-3	DATE	8-18-66	7 1/2' QUADRANGLE	Penfield		
COAL(S) REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES						C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS							
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH					
							% ABUN- DANCE			THICK- NESS																
							> 60	30 — 60	15 — 30	0 — 15	> 1/4"	1/8"— 1/4"	1/32"— 1/8"	< 1/32"												
T	24'																									
4		cover																Soil.								
3	20' 0"	Cl sh				N5												Fissile; beds $\frac{1}{4}"$ - $\frac{1}{2}"$; siderite nodules; <u>Lingula</u> sp.								
2	3' 5"	Coal	1' 3"	26-41	S	N1		+			+		D	1.5	27.5	66.3	4.7	0.72	13850	Thin Sh partings.						
		Bone	0' $\frac{1}{2}"$																	Parting.						
		Coal	0' 3"	22 $\frac{1}{2}$ -25 $\frac{1}{2}$		N1		+	+		+	+	MD	1.4	30.1	63.2	5.3	0.98	13790							
		Sh	0' $\frac{1}{2}"$																							
		Coal	1' 10"	0-22		N1		+			+		MD	$\frac{1.5}{1.5}$	$\frac{28.4}{28.2}$	$\frac{63.6}{64.6}$	$\frac{6.5}{5.7}$	$\frac{1.14}{0.97}$	$\frac{13630}{13724}$	Sh partings. Seam average of <u>74-C-3</u> , Lower Kittanning (B) coal.						
1	0' 6'+	Uc			S	N6														Solid.						

SITE/STATION NO.		74-16 (page 1)		LAT °N.		41°03'50"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING N30°W & N60°E, N80°W & N35°E.					
COAL SAMPLE NO.(S)				LONG °W.		78°44'12"		TWP.		Brady		COMMENTS		Middle Kittanning (C), "Luthersburg", and upper Kittanning (C') coals.							
COMPANY		Maple Hill Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Penfield											
MINE Triangle No. 1		PERMIT 27-7, 8, 9		DATE		6-2-66		7 1/2' QUADRANGLE		Luthersburg											
COAL(S) REPORTED		Middle Kittanning (C).																			
S T R A T I G R A P H I C D A T A																COAL CHEMICAL ANALYSES				C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON			ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN- DANCE	THICK- NESS													
								> 60	30 - 60						15 - 30	0 - 15	> 1/4"				
7	2' 6"	Sts	0' 6"			N1												Carbonaceous; frag's. +1/2"; blocky, rubbly; plt. frgs., leaves, c.			
		Cs	0' 6"		G	N3												Frag's. 1/2"; blocky, rubbly; siderite.			
		Sts	1' 6"		G	N1												Carbonaceous; frag's. +1/2"; blocky, rubbly; plt. frgs., leaves, c.			
6	0' 3"	Siderite			S													Persistent band; mica l, a.			
5	15' - 17'	Sts	5' - 6'		S	N2												Clayey; subfissile; frag's. +1/2"; rubbly; mica l, c.			
		Cs	10' - 11'		G	N2												Silty; subfissile; frag's. +1/2"; siderite bands, r; mica l, c; <u>Chonetes</u> sp., <u>Aviculopectin</u> sp. or <u>Dunbarella</u> sp. sampled.			
4	14' - 17'	Cl sh	3' 0"		G	N2												Silty; subfissile; beds 1/32" - 1/4"; chippy - hackly; <u>Dunbarella</u> sp., a (sampled); orange stain produces a distinct band in highwall.			
		Cs - Cl sh	11' - 14'		G	N3												Silty; fissile; beds 1/32" - 1/4"; chippy - hackly; siderite bands, and laminae (5YR 6/1), c; mica l, c.			
3	0' 6"	Cl sh			G	N1 - N3												Subfissile; beds 1/32" - 1/8"; platy; mica l, c; plt. frgs., leaves, c; <u>Lingula</u> sp.; blocky coal-like fracture; hard; very carbonaceous at bottom, decreases upward.			
2	2' 6"	Coal	1' 6"	12-30	S	N1								MB MD				Cubic fracture; fusain partings, c; pyrite specks.			
		Sts	0" - 1 1/2"		S	N2												Parting, persistent (to 1" - 1 1/2"); coaly, clayey; pyrite nodules, r.			
		Coal	0' 11"	0-11	S	N1								B				Cubic fracture; scattered pyrite; fusain-pyrite partings, r. Unit 2: Middle Kittanning (C) coal.			
1	2' 0"	Cl sh	0' 4"		S	N2												Silty; fissile; beds -1/32"; papery; leaves, a.			
		Sts	1' 0"		S	N2												Clayey; frag's. -1/2"; rubbly; plt. frgs, rootlets, a.			
		Uc	0' 8"		G	N5												Silty; frag's. -1/2"; rubbly; rootlets, a; slickensides.			

SITE/STATION NO.		74-16 (page 2)		LAT °N.		41°03'50"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING N30°W & N60°E, N80°W & N35°E.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
COAL SAMPLE NO(S)				LONG °W.		78°44'12"		TWP.		Brady		COMMENTS		Middle Kittanning (C), "Luthersburg", and upper Kittanning (C') coals.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
COMPANY		Maple Hill Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Penfield																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
MINE Triangle No. 1		PERMIT 27-7, 8, 9		DATE		6-2-66		7 1/2' QUADRANGLE		Luthersburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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GROSS UNIT		L I T H O L O G Y	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																</

SITE/STATION NO.	74-17	LAT °N.	41°04'49"	COUNTY	Clearfield	WEATHERING	extreme	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	78°04'27"	TWP.	Brady	COMMENTS	Interval to Lower Kittanning (B) coal reported as		
COMPANY	Phillips Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Penfield	32'.	Units 2 - 7 are channel filling.		
MINE	PERMIT 183-3	DATE	6-1-66	7 1/2' QUADRANGLE	Luthersburg	Survey identification: Middle Kittanning (C), unit 1; local chan			
COAL(S) REPORTED	Middle Kittanning (C).					nel coal. Unit 3; "Luthersburg coal", Unit 7.			

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE				THICK- NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	46' - 56'																				
7	2' 6"	Coal		0-30		N1												Weathered; thickness reported by operator. "Luthers- burg coal".			
6	2' 0"	Uc			S													Weathered.			
5	23' - 26'	Sts	5' 0"		G	5Y 4/1												Clayey; plt. frgs., leaves, a.			
		Sts	6' 0"		G	5Y 6/1											Fissile; beds 1/2" - 3"; slabby; mica l, c; plt. frgs., leaves, a.				
		Ss	12' - 15'		G	N7											Fissile; beds 1/2" - 3"; slabby; mica l, c; plt. frgs., c; very fine-grained, clay matrix. Persistent 3" Sh parting, N1, 6' - 7' above Unit 3.				
4	2' 0"	St sh			S L	N2												Fissile; beds 1/8" - 1/4"; chippy. Occurs toward channel bottom only.			
3	2' 8" - 4' 0"	Coal		0-48	S	N1							D- MB					Fine cubic fracture; fine shale-fusain partings, c; fusain dust, a. Old deep-mine at west end of stripping. Same coal as at Site 74-18.			
2	8' - 24'	Ss	7' 0"		S													Silty; weathers to 5YR 4/2; large-scale cross-bedding dips W; mica l, c; silt to very fine-grained, clay matrix.			
		St sh - Sts	to 17'		G	N3, 5Y 4/1, 5Y 2/1												Fissile; beds 1/4" - 3"; hackly, rubbly; large-scale cross-bedding dips W; mica l, c; plt. frgs., leaves, c; more silty upward.			
1	2' 8" - 2' 10"	Coal		0-34	S	N1												Coal not seen, reported by operator. Middle Kittanning (C) coal.			

SITE/STATION NO. 74-18		LAT °N. 41°04'33"	COUNTY Clearfield	WEATHERING slight	JOINTING N25°W, N65°W.
COAL SAMPLE NO(S)		LONG °W. 78°43'34"	TWP Brady	COMMENTS Unit 1 is a local channel coal between the Middle	
COMPANY Phillips Coal Co.		GEOLOGIST wee	15' QUADRANGLE Penfield	Kittanning (C) and "Luthersburg" coal. See Site 74-17.	
MINE	PERMIT 183-3	DATE 6-1-66	7 1/2' QUADRANGLE Luthersburg		

COAL(S) REPORTED

S T R A T I G R A P H I C D A T A																	C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
							% ABUN - DANCE			THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"
T	39' - 41'																					
5		Coal				N1												Weathered to blossom. May be slumped.				
4	2' 0"	Uc			S													Weathered to blossom. May be slumped.				
3	33' 0"	Cs	7' 0"		G	5Y 6/1												Silty; frag's. + $\frac{1}{2}$ "; rubbly; plt. frgs., rootlets, a.				
		Cs -	13' 0"		G	5Y 6/1											Silty; fissile; beds $\frac{1}{4}$ " - 3"; chippy, slabby; plt. frgs., leaves, a.					
		Cl sh																				
3		St sh	13' 0"		G	5Y 4/1												Clayey; fissile; beds $\frac{1}{4}$ " - 3"; chippy, slabby; plt. frgs., leaves, a. A 3" Sh unit, N1, 6' - 7 $\frac{1}{2}$ ' above bottom.				
2	1' 0"	Sts - St sh			G	N1 - N2												Fissile: beds $\frac{1}{4}$ " - 3"; chippy; slabby; plt. frgs., c.				
1	2' 9" - 5' 5"	Coal		0-65	S	N1												Small cubic fracture; no major partings, fine shale-fusain partings, c; fusain, a; weathered. Unit 1: Local channel coal.				

SITE NO 74-19

SITE/STATION NO.		74-20		LAT °N.		41°04'22"		COUNTY		Clearfield		WEATHERING		slight		JOINTING		E-W				
COAL SAMPLE NO(S)				LONG °W.		78°43'42"		TWP.		Brady		COMMENTS										
COMPANY		Phillips Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Penfield												
MINE		PERMIT 183-3		DATE		6-1-66		7 1/2' QUADRANGLE		Luthersburg												
COAL(S) REPORTED		Upper Kittanning (C').																				
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE		THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T		Coal	0' 7"	20-27	S	N1												(see Site 74-19, Mine permit 183-3, site c).				
2	2' 3"	Bone	0' 1 1/2"		S	N1												Fine cubic fracture; fine partings, r. Persistent; weathers as an orange band (typical in this area).				
		Coal	1' 4"	2 1/2 - 18 1/2	S	N1											Fine cubic fracture; thin fusain partings, c; fusain, a.					
		Coal	0' 2 1/2"	0-2 1/2	S	N1											Cubic fracture; bony; persistent thin shale partings at top. Unit 2: Upper Kittanning (C') coal.					
1	0' 7"	Uc			S	N2												Frag's. -1/2"; hackly.				
	Note:																	For continuing stratigraphy see Site 74-19 (mine permit 183-3).				

SITE/STATION NO.		74-21 (page 1)		LAT °N.		41°03'46"		COUNTY		Clearfield		WEATHERING		slight		JOINTING		N40°W.					
COAL SAMPLE NO.(S)				LONG °W.		78°42'40"		TWP		Brady		COMMENTS		Laterally uniform highwall.									
COMPANY		Maple Hill Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Penfield													
MINE		PERMIT		DATE		6-2-66		7 1/2' QUADRANGLE		Luthersburg													
COAL(S) REPORTED		Upper Kittanning (C').																					
S T R A T I G R A P H I C D A T A																							
GROSS UNIT																							
NUMBER	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								COAL CHEMICAL ANALYSES				C O M M E N T S				
							ANTHRAXYLON								PROXIMATE (%)								
							% ABUN - DANCE				THICK - NESS				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
2	2' 5"	Coal	4" - 7"	22-29	S	N1													Fine fusain partings, r.				
		Bone	0' 2"		S	N1													Weathers as an orange band.				
		Coal	1' 5"	3-20	S	N1													Cubic fracture; fine fusain partings, c; fusain, a.				
		Coal	0' 3"	0-3	S	N1													Tough. Unit 2: Upper Kittanning (C') coal. 2'2" thick where top is locally cut out.				
1		Uc			S	N5													Shaly; frag's. -1/2"; hackly; rootlets, c; slickensides.				

SITE/STATION NO.		74-21 (page 2)		LAT °N.		41°03'46"		COUNTY		Clearfield		WEATHERING		slight		JOINTING		N40°W.				
COAL SAMPLE NO(S)				LONG °W.				78°42'40"				TWP.		Brady		COMMENTS				Uniform highwall.		
COMPANY				Maple Hill Coal Co.				GEOLOGIST		wee		15' QUADRANGLE		Penfield								
MINE		PERMIT		Stat 7		DATE		6-2-66		7 1/2' QUADRANGLE		Luthersburg										
COAL(S) REPORTED				Upper Kittanning (C').																		
S T R A T I G R A P H I C D A T A												C O A L C H E M I C A L A N A L Y S E S				C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T	30'																					
6		Coal				N1													Blossom; extremely weathered.			
5	15' 0"	Uc	2' 6"		S	N7													Frag's. -1/2"; hackly; extremely weathered.			
		Uc & Ls	1' 6"		G	N7													Frag's. -1/2"; hackly.			
						N4 - N5													Silty; micritic nodules.			
		Cs	2' 0"		G	N7													Note: Uc is reticulated around Ls nodules.			
		Hc	2' 0"		G	N4													Frag's. +1/2"; blocky, rubbly; limonite; "rotted".			
		Sts	3' 0"		G	N5 - N7													Silty; frag's. +1/2"; rubbly, hard.			
		Sts	2' 0"		G	5Y 6/1													Fissile; beds 1/2" - 3"; slabby; hard, nearly a hard clay.			
Cs	2' 0"		G	5Y 6/1														Fissile; beds 1/2" - 3"; slabby; mica l, c.				
																		Silty; frag's. +1/2"; rubbly; mica l, c; plt. frgs., leaves, c.				
4	0' 9"	Cl sh			S	N2, 5YR 2/1													Silty; fissile; beds 1/32" - 1/4"; chippy; plt. frgs., leaves, a.			
3		Isc st	2' 0"		S	5YR 6/1 5Y 4/1													Fissile; beds 1/2" - 3"; slabby; plt. frgs., r.			
		Iss st	2' 0"		G	5G 8/1 5G 4/1													Fissile; beds 1/2" - 3"; slabby; plt. frgs., r; very fine-grained.			
		Isc st	3' 0"		G	N4, N5													Fissile; beds 1/2" - 3"; slabby; plt. frgs., r.			
		Sts	2' 0"		G	N4													Clayey; frag's. +1/2"; blocky, rubbly; plt. frgs., leaves, c.			
		St sh	2' 0"		G	N3 - N5													Clayey; fissile; beds 1/32" - 1/8"; chippy; plt. frgs., leaves, c.			
		St sh	1' 0"		G	N1														Fissile; beds 1/32" - 1/8"; chippy; mica l, a; plt. frgs., leaves, c.		

SITE/STATION NO.	74-22	LAT °N.	41°01'54"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO(S)	74-C-16	LONG °W.	78°41'11"	TWP.	Brady	COMMENTS			
COMPANY	Donald J. Jury	GEOLOGIST	wee	15' QUADRANGLE	Penfield				
MINE	Jenny Lee # 4	PERMIT	470-1	DATE	6-26-67	7 1/2' QUADRANGLE	Luthersburg		
COAL(S) REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A													C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						A N T H R A X Y L O N						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE				THICK- NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8"- 1/4"	1/32"- 1/8"	< 1/32"							
T	13'																	Coal analyzed M/7-7-69			
3	10' 6"+	Cl sh	4'+			N2 - N3												Fissile; beds 1/8" - 1/4"; hackly; mica l. c; <u>Lingula</u> sp. at 7' 6" from bottom of unit 3.			
		Cl sh	6' 0"		G	N3												Subfissile; beds 1/8" - 1/2"; chippy, equant, hackly; plt. frgs., leaves, c; siderite bands and nodules, r; <u>Lingula</u> sp. at 4' from bottom of unit 3, c.			
		Cl sh	2" - 5"		G	N3												Subfissile; beds 1/8" - 1/2"; chippy; plt. frgs., c; vitrain stringers.			
2	2' 2"	Coal	1' 1"	13-26	G	N1		+		+	VB MD	0.6	29.3	60.9	9.2	0.94	13792	Cubic fracture; partings in upper half, c.			
		Bone	0' 1"		S	N2												Parting.			
		Coal	1' 0"	0-12	S	N2		+		+	+	VB	0.8 0.7	30.4 29.8	61.4 61.1	7.5 8.4	0.87 0.91	14107 13943	Splintery fracture; partings, r. Seam average of <u>74-C-16</u> , Lower Kittanning (B) coal.		
1		Uc																			

SITE/STATION NO.		74-23		LAT °N.		41°04'11"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COAL SAMPLE NO(S)				LONG °W.				78°42'13"				TWP.				Brady				COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
COMPANY				Maple Hill Coal Co.				GEOLOGIST		wee		15' QUADRANGLE		Penfield																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MINE		Triangle # 2		PERMIT		28-11		DATE		6-27-67		7 1/2' QUADRANGLE		Luthersburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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SITE/STATION NO.		74-24		LAT °N.		41°14'51"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		74-C-17		LONG °W.		78°35'47"		TWP.		Huston		COMMENTS		Lower Kittanning (B) coal is being augered.							
COMPANY				Compass Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Penfield							
MINE		Middle Branch		PERMIT		DATE		6-19-68		7 1/2' QUADRANGLE		Penfield		Field Notebook: Penfield Quadrangle Station 34.							
COAL(S) REPORTED				Lower Kittanning (B).																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)						
							% ABUN - DANCE	THICK - NESS													
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"												
T	47'																Coals analyzed M/7-25-69				
7		cover															Soil.				
6	2' +	Coal															Extremely weathered. Middle Kittanning (C) coal.				
5	3' 0"	Uc			S	N7											Semi-plastic to plastic.				
4	17' 0"	Cl sh			G	N6											Platy; beds 1/4" - 1/2".				
3	10' 0"	Ss			S	N5											Flaggy; very fine-grained. St sh interbedds near top, r; beds 3" - 1'.				
2	11' 6"	Cl sh			G	N4											Platy; siderite nodules, c; silty upward; beds 1/8" - 1/4".				
1	3' 4"	Coal	1' 4"	24-40	S	N1	+			+	MD	0.9	33.1	61.8	4.2	1.53	14664				
		Bone	0' 3/4"		S													Parting; not sampled.			
		Coal	1' 11 1/4"	0-23 1/4	S	N1	+			+	MD	0.9 0.9	32.9 33.0	58.8 60.0	7.4 6.1	2.16 1.90	14131 14348	Seam average of 74-C-17, Lower Kittanning (B) coal. Unit 1 dips SE 5° (approximately).			

SITE/STATION NO. 74-25 (page 1)				LAT °N. 41°04'52"				COUNTY Clearfield				WEATHERING moderate		JOINTING:(coal) N89°W, N8°E, N80°W.							
COAL SAMPLE NO.(S) 74-C-18				LONG °W. 78°38'58"				TWP. Union				COMMENTS : (shale) N31°W, N85°W, N47°E.									
COMPANY Strishock Coal Co.				GEOLOGIST gbg		15' QUADRANGLE Penfield		See Site 74-25 (page 2) for continuing stratigraphic													
MINE Dressler Strip		PERMIT 214-3		DATE 8-22-68		7½' QUADRANGLE Luthersburg		units 4-10.													
COAL(S) REPORTED Lower Kittanning (B) and Middle Kittanning (C).																					
S T R A T I G R A P H I C D A T A												C O A L C H E M I C A L A N A L Y S E S				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						A N T H R A X Y L O N						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE		THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15		> 1/4"									
3	9' 6"	Sts	1' 0"		S	N4												Beds 1/2"; rubbly; plt. frgs., r.			
		Cs	6' 6"		G	N3 - N4												Beds 1/4" -1"; subfissile; platy, rubbly; siderite nodules, lenses to 2", a; <u>Pecten</u> sp, c, at 8" from bottom; <u>Mesolobus</u> sp., c, at 3' from bottom; -10% silt laminae; shaly in places.			
		Cs	1' 10"		G	N3												Subfissile; platy, rubbly; <u>Lingula</u> sp., a, 1' 1" - 2' from base of unit 2; shaly at top.			
		Cs	0' 1½"		G	N1 - 5Y 2/1												Rubbly; pyrite "grains" to ¼", c; carbonaceous.			
2	2' 6¼"	Coal	0' 4½"	25 ¾ - 30½	S	N1	+			+	B										
		Cs	0' ½"		S	N1												Parting, thin and persistent.			
		Coal	1' 4½"	8 ¾ - 25½	S	N1	+			+	B							Pyrite nodules ½" - ¾", c.			
		Coal	0' ¾"	8 - 8 ¾		N1		+			D							Bone; persistent.			
		Coal	0' 8"	0-8		N1		+			MD	1.1	27.3	64.6	7.0	1.09	14107	Dirty. Channel sample of 74-C-18, Lower Kittanning (B) coal.			
		Total		0-30½																	
1		Cs			S	N5-N7												Plastic in places.			

SITE/STATION NO.		74-25 (page 2)		LAT °N.		41°04'52"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING: (coal)		N89°W, N80°E, N80°W.							
COAL SAMPLE NO.(S)		74-C-18		LONG °W.		78°38'58"		TWP.		Union		COMMENTS						: (shale) N31°W, N85°W, N47°E.							
COMPANY		Strishock Coal Co.		GEOLOGIST		gbg		15' QUADRANGLE		Penfield								See Site 74-25 (page 1) for preceding stratigraphic							
MINE Dressler strip		PERMIT 214-3		DATE		8-22-68		7 1/2' QUADRANGLE		Luthersburg								units 1 - 3.							
COAL(S) REPORTED		Lower Kittanning (B)		and Middle Kittanning (C).																					
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS					
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE		THICK - NESS					MOISTURE	VOLATILE	FIXED CARBON	ASH								
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"		
T	130'																								
1	28'+	Ss				N5 - 10YR 4/2													Beds 1" - 3"; flaggy; mica 2 - 3, c; very fine- to fine-grained, fair sorting, subangular, clay matrix, dark minerals, r. Coal "blossom" appears 30' - 35' above base of unit 11.						
10	36' 0"	Cs	5' 0"		U	N1 - N3													Beds 1/2"-1"; hackly, rubbly. 8"-12" coal rider between Units 10 & 11 at south end (200 yards) of cut						
		Cs	15' 0"		G	N4													Beds 1/4" - 1"; hackly, rubbly; siderite nodules, lenses to 1", c.						
			8' 0"		G														Covered interval. Possibly Cs.						
		Cs	8' 0"		G	N3													Beds 1/2" - 2"; blocky, rubbly; siderite nodules to 3", c.						
9	3' 1/2"	Coal	1' 2"	22 1/2-36 1/2	S	N1													Extremely weathered.						
		Uc	0' 1/2"		S	N3													Parting; plastic.						
		Coal	1' 10"	0-22	S	N1													Extremely weathered.						
																			Unit 9, Middle Kittanning (C) coal.						
8	3' 0"	Uc			S	N3 - N5													Plastic; solid; frag's. -1/2"; hackly; Fe-stain, c.						
7	2' 6"	Sts			G	N5													Sandy; solid; frag's. +1/2"; rubbly; mica 2 - 3, c; rootlets, c.						
6	20' 0"	Sh																	Inaccessible; appears to be dark shale, with siderite bands and lenses.						
5	1' 0"	Cl sh				N3													Beds 1/8" - 1/4", frag's. -1/2"; platy, hackly.						
4	24' 3"	lss st	11' 0"		G	N3 - N5													Beds 1/4" - 1"; platy; limonite septarian concretions to 8", c - a; Ss and Sts in equal amounts.						
		Ss	2' 3"		S	N7 - 5GY 6/1													Beds 1/2" - 2"; flaggy; mica 2, c; plt. frgs., a; very fine-grained, fair sorting, subangular, clay matrix; even-bedded; minor interbeds of St sh to 1/2" thick.						
		lss st	11' 0"		S	N4 - N5													Beds 1" - 2"; platy, slabby; plt. frgs., a; Fe-stain, a; massive; sand -10%.						

SITE/STATION NO.		75-1		LAT °N.		40°47'34"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING													
COAL SAMPLE NO.(S)				LONG °W.				78°33'19"				TWP.		Beccaria		COMMENTS													
COMPANY				Empire Coal Co.				GEOLOGIST		wee		15' QUADRANGLE		Curwensville															
MINE		PERMIT		69-1		DATE		6-21-66		7 1/2' QUADRANGLE		Irvona																	
COAL(S) REPORTED																		Upper Freeport (E).											
S T R A T I G R A P H I C																		D A T A		COAL CHEMICAL ANALYSES						C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS								
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH						
							% ABUN - DANCE				THICK - NESS																		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"															
T	17'																												
4	14' 0"	St sh	10' 0"			N4												Sandy; fissile; beds 1/8" - 1/2"; chippy; with very fine-grained Ss laminae.											
		St sh	2' 0"		G	N4												Fissile; beds 1/8" - 1/2"; slabby.											
		St sh	2' 0"		G	N4												Fissile; beds 1/32" - 1/8"; platy.											
3	0' 8"	Cs - Cl sh			S	N1												Fissile; beds 1/4" - 1"; chippy, slabby; plt. frgs., spores?, c; hard.											
2	2' 1 1/2"	Coal		0-25 1/2	S	N1												Splintery fracture; several impersistent thin partings. Upper Freeport (E) coal.											
1		Uc			S																								

SITE/STATION NO.		75-2		LAT °N.		40°58'27"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING		N15°E, N45°W, N50°W.																																																													
COAL SAMPLE NO.(S)				LONG °W.				78°41'49"				TWP.				Penn				COMMENTS																																																											
COMPANY				W. G. Hartman Const. Co.				GEOLOGIST				wee				15' QUADRANGLE				Curwensville																																																											
LINE				PERMIT				411-2				DATE				6-16-66				7 1/2' QUADRANGLE				Mahaffey																																																							
COAL(S) REPORTED																				Lower Freeport (D).																																																											
S T R A T I G R A P H I C																				D A T A																				C O A L C H E M I C A L A N A L Y S E S																				C O M M E N T S																			
GROSS UNIT		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE , IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		C O A L								P R O X I M A T E (%)				SULFUR (%)		AIR DRYING LOSS (%)		BRITISH THERMAL UNITS																																																			
INTERVAL (TOTAL)												ATTRITUS LUSTER		MOISTURE		VOLATILE		FIXED CARBON		ASH																																																											
																						A N T H R A X Y L O N																																																									
																						% ABUN - DANCE										THICK - NESS																																															
NUMBER												30 - 60		15 - 30		0 - 15		> 1/4"		1/8" - 1/4"		1/32" - 1/8"		< 1/32"																																																							
28'																																																																															
25' 0"		Ss								N7																										Beds 1" - 1'; branches, plt. frgs., leaves, c; cross-bedding dips approximately N50°W.																																											
2' 7" - 2' 6"		Coal				0-30		U		N1										B														Cubic fracture; thin discontinuous partings, c. "Roll-ly" top due to differential compaction of overlying Ss (Unit 3). Lower Freeport (D) coal.																																													
		Uc						S																																																																							

SITE/STATION NO.		75-3 (page 1)		LAT °N.		40°59'11"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING		N20°E, N25°W.	
COAL SAMPLE NO.(S)				LONG °W.		78°42'10"		TWP.		Penn		COMMENTS							
COMPANY		W. G. Hartman Const. Co.		GEOLOGIST		wee		15' QUADRANGLE		Curwensville									
MINE				PERMIT		411-2		DATE		6-16-66		7 1/2' QUADRANGLE		Mahaffey					
COAL(S) REPORTED		Upper Kittanning (C').																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)		AIR DRYING LOSS (%)	
							% ABUN - DANCE		THICK - NESS										
							> 60	< 1/4"	> 1/8"	< 1/32"									
		Coal	0" - 3"	29-31	S	N1												Shaly.	
		Coal	0' 7"	22-29	S	N1					MD							Fine cubic fracture; fine partings, c.	
		Bone	0' 2"		S	N1					D							Bone; weathers as a yellow band.	
		Coal	1' 2"	6-20	S	N1					MB							Fine cubic fracture; fine partings, c; fusain, a.	
											MD								
		Coal	0' 2"	4 - 6	S	N1					D							Irregular fracture; tough.	
		Sh	0' 1/4"		S													Parting.	
2	2' 1" - 2' 7"	Coal	0" - 4"	0 - 4	S	N1												Fusain, a. Pinches out to the north.	
1		Uc			S														

SITE/STATION NO.		75-3 (page 2)		LAT °N.		40°59'11"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING		N20°E, N25°W.			
COAL SAMPLE NO.(S)				LONG °W.				78°42'10"				TWP.		Penn		COMMENTS					
COMPANY				W. G. Hartman Const. Co.				GEOLOGIST		wee		15' QUADRANGLE		Curwensville							
MINE		PERMIT		411-2		DATE		6-16-66		7 1/2' QUADRANGLE		Mahaffey									
COAL(S) REPORTED				Upper Kittanning (C').																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		L I T H O L O G Y	I N T E R V A L (SUB - UNIT)	C O A L B E N C H E S C U M U L A T I V E , I N I N C H E S	C O N T A C T (U P P E R)	C O L O R (M U N S E L L)	C O A L							P R O X I M A T E (%)				S U L F U R (%)	A I R D R Y I N G L O S S (%)	B R I T I S H T H E R M A L U N I T S	
N U M B E R	I N T E R V A L (T O T A L)						A N T H R A X Y L O N					A T T R I T U S	M O I S T U R E	V O L A T I L E	F I X E D C A R B O N	A S H					
							% A B U N - D A N C E										T H I C K - N E S S				
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"										
T	36'																				
8		Coal				N1													Blossom; weathered. Lower Freeport (D) coal.		
7	3' 0"	Uc			S	N7													Frag's. -1/2"; hackly; rootlets, c; limonitic.		
6	6' 6"	Sts	3' 0"		G	5Y 6/1													Clayey; frag's. +1/2"; rubbly; plt. frgs., rootlets, c; limonitic.		
		St sh	3' 6"		G	5Y 6/1													Clayey; fissile; beds 1/8" - 1/4"; hackly; plt. frgs., c.		
5	11' 6"	Ss	4' 6"		G	5GY 6/1													Silty, clayey; fissile; beds 1" - 8"; slabby; mica l, c; plt. frgs., c; limonite (siderite?) nodules and bands.		
		lss st	3' 0"		G	5Y 6/1 5Y 4/1													Fissile; beds 1/2" - 3"; plt. frgs., leaves, c.		
		St sh	4' 0"		G	N4													Clayey; fissile; beds 1/4" - 1/2"; chippy; plt. frgs., leaves, c.		
4	13' 0"	Cl sh			G	5Y 6/1 and N2													Silty; fissile; beds 1/4" - 1/2"; chippy; mica l, c; plt. frgs., leaves, c. Unit 4: Channel filling, beds dip 5° at N35°W. In places is in contact with top of Unit 2. Interbedded with beds 1' - 1 1/2' in the lower 9'; upper 4' consists of one bed of Cl sh, 5Y 6/1.		
3	0' - 4 1/2'	Sts & Ss			S or U	N5, 5Y 6/1													Fissile; beds 6" (to 1" upward); slabby; mica l, c; plt. frgs., c; silt to very fine-grained, clay matrix, dark minerals; heavy, may be sideritic. Unit pinches out.		

SITE/STATION NO.		75-4		LAT °N.		40°59'11"		COUNTY		Clearfield		WEATHERING		JOINTING						
COAL SAMPLE NO(S)				LONG °W.		78°41'45"		TWP.		Penn		COMMENTS								
COMPANY		W. G. Hartman Const. Co.		GEOLOGIST		wee		15' QUADRANGLE		Curwensville		Units 3 - 5 involved in slump blocks.								
MINE		PERMIT		DATE		6-16-66		7 1/2' QUADRANGLE		Mahaffey		Middle Kittanning (C) coal seen nearby at about 35'								
COAL(S) REPORTED		Lower Kittanning (B).										higher than unit 2.								
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN- DANCE	THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"						
T	34'																			
5	10' 0"	Iss st																Fissile; beds 1/2" - 1'; slabby; mica 1 - 2, a; plt. frgs., c.		
4	6' 6"	Ss			G	5Y 6/1												Fissile; beds 6" - 3'; slabby; mica 1, c; plt. frgs., c; very fine- to fine-grained, clay matrix, dark minerals.		
3	16' - 22'	Sts	5' - 7'		U	N5												Fissile; beds 1/2" - 2"; slabby; plt. frgs, c.		
		St sh	4' - 5'		G	N5												Clayey; fissile; beds 1/4" - 1/2"; hackly.		
		Cl sh & Cs	7' - 10'		G	N2 - N4												Subfissile; beds 1/4" - 3"; hackly, rubbly; <u>Lingula</u> sp. zone at 3 1/2' from bottom.		
2	1' 6" - 2' 2"	Coal	0' 5"	21-26	S	N1						MB						Blocky		
		Clay-Fusain	0' 1/4"		S													Parting, persistent zone.		
		Coal	0' 3"	18-21	S	N1						B								
		Sts	0' 1/4"		S													Parting, persistent.		
		Coal	0' 10" - 1' 3"	3-18	S	N1						MB								
		Coal	0" - 3"	0-3	S	N1						D						Columnar fracture; tough. Unit 2: Lower Kittanning (B) coal.		
1		Uc																		

[illegible]

SITE/STATION NO.		75-7 (page 2)		LAT °N.		40°54'20"		COUNTY		Clearfield		WEATHERING		slight		JOINTING		N48°E, N-S			
COAL SAMPLE NO(S)		75-C-1		LONG °W.		78°31'47"		TWP.		Pike		COMMENTS		Uniform highwall. Lower Freeport (D) coal being augered.							
COMPANY				Dominick Orlando				GEOLOGIST		wee		15' QUADRANGLE		Curwensville							
MINE		Orlando #1		PERMIT		416-1		DATE		6-27-67		7 1/2' QUADRANGLE		Curwensville							
COAL(S) REPORTED				Lower Freeport (D) and Upper Freeport (E).																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"					1/8" - 1/4"
T	84'																				
		Ss	10' 0"			N3 - 5Y 3/2												Beds 2" - 1'; mica 1 - 2, c; plt. frgs., r; silt to very fine-grained, poor sorting, subangular, clay matrix.			
11	14' 0"	Ss	4' 0"			N3 - 5Y 3/2												Two beds: lower 2 1/2', upper 1 1/2'; mica 1 - 2, c; plt. frgs., r; silt to very fine-grained, poor sorting, subangular, clay matrix.			
10	10' 0"	Cl sh			S	N3												Silty; fissile; beds 1/8" - 1/4"; chippy; plt. frgs., leaves, a.			
9	2' 0"	Ss			S	N5												Silty; fissile; beds 1/2" - 3"; slabby; mica 1, c; silt to very fine-grained, poor sorting, subangular, clay matrix, dark minerals; Fe-stain.			
8	15' 0"	St sh			S	N3												Clayey; fissile; beds 1/8" - 1/4"; chippy; plt. frgs., r.			
7	0' 9"	Cl sh			S	N1												Fissile; beds 1/32" - 1/8"; chippy; hard, brittle.			
6	2' 3"	Coal		0-27	S	N1												Upper Freeport (E) coal.			
5	17' 0"	Uc	5' 6"		S	N5												Micritic; interbedded with Ls nodules, 1" - 2'. Frag's. 1/2"+; hackly; root-worked and weathered zone.			
		Uc	7' 6"		G																
		Sts	4' 0"		G	N6 & Fe-stain															
4	2' 0"	Ss			G	N6												Beds 6" - 2'; equant, blocky; mica 1 - 2, a; very fine-grained, fair sorting, subrounded, silica cement, dark minerals.			

SITE/STATION NO.	75-8	LAT °N.	40°52'57"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING	N27°E, N63°W.
COAL SAMPLE NO.(S)	75-C-2	LONG °W.	78°39'23"	TWP.	Greenwood	COMMENTS	Uniform highwall.		
COMPANY	Benjamin Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Curwensville				
MINE	Camp Corbly	PERMIT	64-1	DATE	6-27-67	7 1/2' QUADRANGLE	Mahaffey		
COAL(S) REPORTED	Upper Freeport (E).								

S T R A T I G R A P H I C D A T A															C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SJB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						C O A L P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						% ABUN- DANCE			T H I C K - N E S S			ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
																			Coal analyzed M/7-7-69			
1	41'																					
5	17' - 22'	Sts Ss	15'+ 2' - 7'		G	5Y 6/2 5Y 8/1 (Stain)													Fissile; beds 1/2" - 3" Fissile; beds 6" - 4 1/2' (mostly 2' - 4'); blocky; channel axis N20°E; mica 1 - 2, c; very fine to fine- grained, fair sorting, subangular, clay matrix, dark minerals.			
4	14' 0"	Sts	7' 0"		S	N5													Clayey; fissile; beds 1" - 3"; flaggy, slabby; plt. frgs., a.			
		St sh	3' 0"		G	N4													Clayey; beds 1/8" - 1/2"; chippy, hackly; plt. frgs., c; sand laminae, r.			
		lsc sh	4' 0"		G	N3 - N4													Beds 1/8" - 1/2"; chippy; plt. frgs., r.			
3	1' 7"	St sh	0' 4"		G	N2 - N3													Fissile; beds 1/8" - 1/4"; chippy.			
		Sts	1' 0"		S	N4													Clayey; subfissile; beds 1/2" - 1"; blocky, rubbly; plt. frgs., leaves, r.			
		Cs	0' 3"		G	N2													Frag's. 1/2"±; equant, hackly; plt. frgs., r; very hard.			
2	2' 3"	Coal		0-27	S	N1	+												Nonpersistent partings to 1/2", r. 75-C-2, Upper Freeport (E) coal.			
1	1'+	Uc			S	N5													Hackly; plt. frgs., rootlets, a.			

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SITE NO. 75-10 (page 1)

SITE/STATION NO.		75-10 (page 2)		LAT °N.		40°53'43"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING: (coal)		N97°E-N85°W, N20°W.								
COAL SAMPLE NO(S)		75-C-4		LONG °W.		78°38'02"		TWP.		Greenwood		COMMENTS		: (shale) N29°W, N45°E, N40°E.												
COMPANY		Benjamin Coal Co., Inc.		GEOLOGIST		gbg		15' QUADRANGLE		Curwensville		See Site 75-10 (page 1) for preceding stratigraphic														
MINE		Cherry Corners ?		PERMIT		64-12A		DATE		8-27-68		7 1/2' QUADRANGLE		Mahaffey		units 1 - 4.										
COAL(S) REPORTED		Upper Freeport (E).																								
S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS							
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH										
							% ABUN - DANCE		THICK - NESS																	
							> 60	30 - 60	15 - 30	0 - 15											> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"		
T	107'																									
8	20' 0"	cover																Soil, to top of hill.								
7	42' 6"	Ss	38' 6"			N7 - 10YR 5/4												Beds 1/2"-1'; flaggy, slabby; mica l, a; very fine- to fine-grained, fair sorting, subangular, clay matrix; lower 10' is massive with beds 1'-3', thin bedded near top; weathered buff to brown at top.								
		Ss	4' 0"		G	N7 - 10YR 6/2											Beds 1"-1'; mica l, a; branches, trunks, c; fine-grained, fair sorting, subangular, clay matrix, dark minerals, clay galls and chips, a; coal stringers to 1/2" x 2', c; weathers pink in places.									
6	16' 0"	Sts	2' 0"		U	5GY 6/1												Frag's. 1/2"+; clayey; hackly, rubbly; rootlets, c.								
		Ss	2' 0"		G	5GY 6/1											Beds 1/2" - 3"; platy, flaggy; very fine-grained, fair sorting, subangular, clay matrix.									
		Sts	12' 0"		G	N5 - 5GY 6/1											Frag's. -1/2"; hackly; thin sand laminae near top; limonite septarian concretions to 8", c; Fe-stain, a.									
5	11' 0"	lsc st	5' 0"		G	N4 - N6												Beds 1/4" - 1/2"; frag's. -1/2"; hackly; siderite nodules -1", c; limonite septarian concretions to 6", c.								
		Cs	6' 0"		G	N1 - 5Y 2/1											Beds 1/2" - 3"; frag's. +1/2"; blocky, rubbly; color lamination.									
Note:																		Slump block appears to have rotated out of highwall; coal depressed and roly under slump block. Strip continues for nearly 200 yards to the south, but highwall is covered.								

SITE/STATION NO. 75-11		LAT °N. 40°54'47"		COUNTY Clearfield	WEATHERING fresh	JOINTING: (coal) N78°W, N25°W, N10°E.
COAL SAMPLE NO.(S) 75-C-5		LONG °W. 78°31'30"		TWP. Pike	COMMENTS : (shale) N15°W, N61°E, N22°E.	
COMPANY Leslie Mays Coal Co.		GEOLOGIST gbg	15' QUADRANGLE Curwensville		Upper Freeport coal has been stripped off entire hilltop. Unit	
MINE Mays # 1	PERMIT 365-1	DATE 8-27-68	7 1/2' QUADRANGLE Curwensville		#5 (siliceous Ss) is so hard that strippers are drilling	
COAL(S) REPORTED Lower Freeport (D).		horizontally below it instead of trying to go through it.				

S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES						C O M M E N T S
GROSS UNIT		LITHOLOGY	INTERVAL (SJB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						% ABUN- DANCE			THICK- NESS				MOISTURE	VOLATILE	FIXED CARBON	ASH				
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	34'																		Coal analyzed M/7-25-69		
8	1' 6"+	Uc				N4 - N5													Beds 1" - 8"; plastic; silty to sandy in places.		
7	1' 6"	Cs	1' 6"		G	N4													Beds 1/4" - 2"; frag's. -1/2"; hard; hackly, sharp angular fragments; bedded until broken.		
6	11' 10"	Ls	4' 0"		G	N3 - N4													Beds 1' - 3', solid; blocky; reticulated with an Uc, N5, hackly.		
		Uc	6' 0"		G	N4												Solid, frag's. 1/2"+; hackly, rubbly; Ls nodules to 6", c.			
		Ls	0' 6"		S	N3 - N4												Beds 1" - 4"; interbedded with Cs, N3 - N5; sparry calcite, c.			
		Uc	1' 4"		S	N4												Solid, frag's. -1/2"; plastic; hackly; slickensides.			
5	6" - 2'	Ss			S	N7 - N9													Solid; blocky; fine-grained, fair sorting, subrounded, clay matrix, silica cement; very siliceous, hard; thins eastward.		
4	7' 0"	Sts	4' 0"		U	N4 - 5GY 4/1													Frag's. 1/2"+; hackly, rubbly; siderite nodules -2", c; sandy nodules to 1', c; rootlets, a.		
		Sts	3' 0"		G	N4													Frag's. +1/2"; rubbly; siderite nodules to 3", c; plt. frgs., a, leaves, c.		
3	8' 0"	lsc st			G	N4 - N5													Beds 1"-1'6"; subfissile; slabby, blocky; plt. frgs., leaves, branches, a; conchostracans, a, 0"-2' 6" above bottom.		
2	1' 10"	Coal		0-22	S	N1	+			+	+		B	0.8	25.6	65.6	8.0	2.06	14204	Crumbly; pyrite lenses to 1/2" thick x 3' long, c. 75-C-5, Lower Freeport (D) coal.	
1		Cs			S	N1 - 5Y 2/1														Frag's. -1/2"; hackly.	

SITE/STATION NO.		84-1		LAT °N.		41°06'31"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING													
COAL SAMPLE NO.(S)				LONG °W.		78°18'27"		TWP.		Girard		COMMENTS This measured section is north of fault. Lower Kittanning (B) coal (unit 1, site 84-1) is faulted and 3' higher than Lower Freeport (D) coal (unit 1, site 84-2).																	
COMPANY		Smith and Zindel		GEOLOGIST		adg		15' QUADRANGLE		Clearfield																			
MINE		Homestead		PERMIT		192-2		DATE		6-28-66		7 1/2' QUADRANGLE		Leontes Mills															
COAL(S) REPORTED		Lower Kittanning (B).																											
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS										
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH														
							% ABUN - DANCE		THICK - NESS																				
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"					1/8" - 1/4"	1/32" - 1/8"	< 1/32"						
T	28'																												
4	18' 0"	lss sh																Beds 1/2" - 1'.											
3	5' 0"	Ss			G	N5												Beds 3" - 1'; fine-grained; clay matrix, r.											
2	0' 10"	Sh			S	N1																							
1	3' 7"	Coal	0' 7"	36-43	S	N1												Banded.											
		Sh	0' 4"															Parting.											
		Coal	2' 8"	0-32		N1												Unit 1: Lower Kittanning (B) coal.											

SITE/STATION NO.				84-2				LAT °N.				41°06'31"				COUNTY				Clearfield				WEATHERING				fresh				JOINTING																															
COAL SAMPLE NO.(S)								LONG °W.				78°18'27"				TWP.				Girard				COMMENTS				This measured section is south of fault. Lower																																			
COMPANY				Smith and Zindel				GEOLOGIST				adg				15' QUADRANGLE				Clearfield				Freeport (D) coal (unit 1, site 84-2) is faulted and lies 3'																																							
MINE				Homestead				PERMIT				192-2				DATE				6-28-66				7 1/2' QUADRANGLE				Leontes Mills				below the Lower Kittanning (B) coal (unit 1, site 84-1).																															
COAL(S) REPORTED				Lower Freeport (D).																																																											
S T R A T I G R A P H I C																												D A T A												COAL CHEMICAL ANALYSES												C O M M E N T S											
GROSS UNIT		INTERVAL (TOTAL)		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE, IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL								ATTRITUS LUSTER				PROXIMATE (%)				SULFUR (%)				AIR DRYING LOSS (%)				BRITISH THERMAL UNITS																									
NUMBER														ANTHRAXYLON																																																	
														% ABUN - DANCE				THICK - NESS																																													
														> 60		30 - 60		15 - 30		0 - 15																						> 1/4"		1/8" - 1/4"		1/32" - 1/8"		< 1/32"															
T		30'																																																													
3		25' 0"		Ss to Sts								5Y 6/1																						Beds 3" - 2'; mica, r; silt to very fine-grained; clay matrix, r.																													
2		3' 0"		Cs						S		N5																						Leaves, a.																													
1		2' 2"		Coal				0-26		S		N1								B														Lower Freeport (D) coal.																													

SITE/STATION NO.		84-3		LAT °N.		41°14'22"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING																					
COAL SAMPLE NO.(S)				LONG °W.				78°29'52"				TWP.				Huston																					
COMPANY				New Shawmut Mng. Co.				GEOLOGIST				adg				15' QUADRANGLE				Clearfield																	
MINE				Bell Hollow				PERMIT				196-4				DATE				6-30-66				7 1/2' QUADRANGLE				Huntley									
COAL(S) REPORTED				Lower Kittanning (B)				and Lower Kittanning (B)				rider ? coal.																									
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES										C O M M E N T S									
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH														
							% ABUN - DANCE																														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																							
T	34'																																				
3		Coal																Slight blossom at top of highwall. Lower Kittanning (B) rider coal?																			
2	30' 0"	Cs				N5												Beds 1/2" - 3"; siderite nodules; <u>Lingula</u> sp.																			
1	3' 10"	Bone	0' 9"		S																																
		Coal	0' 11 1/2"	25 1/2-37		N1					MD							Slightly bony; banded.																			
		Sh	0' 1 1/2"															Parting.																			
		Coal	0' 5"	20-25		N1					MD							Thin Sh partings; banded.																			
		Bone	0' 1"																																		
		Coal	1' 7"	0-19		N1					MB							Pyrite; banded. Unit 1: Lower Kittanning (B) coal.																			

SITE/STATION NO.		84-4 (page 2)		LAT °N.		41°01'05"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING													
COAL SAMPLE NO(S)				LONG °W.		78°18'38"		TWP.		Bradford		COMMENTS						Type section of Millstone Run Fm. (See: IC 61).											
COMPANY				GEOLOGIST		wee		15' QUADRANGLE		Clearfield																			
MINE		PERMIT		DATE		6-8-67		7 1/2' QUADRANGLE		Lecontes Mills																			
COAL(S) REPORTED				Lower Kittanning (B).																									
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS										
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH								
							% ABUN - DANCE				THICK - NESS																		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"						
T	76'																												
15	1' +	Coal				N1												Weathered.											
14	13' 6"	Uc	3' 6"		S	N7												Semi-plastic; frag's. -1/2"; hackly; rootlets, a.											
		C1 sh	5' 0"		G	N7											Fissile; beds 1/8" - 1/4"; chippy.												
		Uc	5' 0"		G	N7												Frag's. -1/2"; hackly; siderite nodules; rootlets, <u>Stigmaria</u> , a.											
13	0' 3"	Sh			S	N1 - N2												Coaly; fissile; frag's. 1/32" - 1/8"; chippy; plt. frgs., leaves, a; carbonaceous. Lower Kittanning (B5) coal equivalent.											
12	6' 0"	C1 sh			S	N3												Fissile; frag's. 1/32" - 1/8"; chippy; plt. frgs., leaves, a.											
11	3' 6"	Ss			S	N7												Solid; mica 1 - 2, c; fine-grained, good sorting, dark minerals.											
10	11' 0"	St sh	10' 6"		S	N3												Fissile; beds 1/32" - 1/8"; chippy; 1 or 2 siderite bands; <u>Orbiculoidea</u> sp., r.											
		St sh	0' 6"		G	N1												Fissile; beds -1/32"; chippy; <u>Orbiculoidea</u> sp., r.											
9	2' 4"	Coal	0' 7"	21-28	S	N1												Weathered.											
		St sh	0' 9"		S	N5												Fissile; beds 1/32" - 1/8"; chippy.											
		Sh	0' 6"		G	N2												Coaly; fissile; beds -1/32" - 1/8"; papery, chippy.											
		Coal	0' 6"	0-6	G	N1												Weathered.											
																		Unit 9: Lower Kittanning (B4) coal.											

TE/STATION NO.		85-1		LAT °N.		40°51'43"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING	
COAL SAMPLE NO.(S)		85-C-92		LONG °W.		78°19'07"		TWP		Decatur		COMMENTS		A fault lies just to the west.			
COMPANY		Elliot Coal Mine Co.		GEOLOGIST		wee		15' QUADRANGLE		Houtzdale							
MINE		Sutton # 10		PERMIT		59-4C		DATE		6-21-67		7 1/2' QUADRANGLE		Houtzdale			
COAL(S) REPORTED		Middle Kittanning (C).															
S T R A T I G R A P H I C D A T A																	
COAL CHEMICAL ANALYSES																	
C O M M E N T S																	
COALS																	
PROXIMATE (%)																	
ANTHRAXYLON																	
THICKNESS																	
ATTRITUS LUSTER																	
MOISTURE																	
VOLATILE																	
FIXED CARBON																	
ASH																	
SULFUR (%)																	
AIR DRYING LOSS (%)																	
BRITISH THERMAL UNITS																	
Coals analyzed M/7-7-69																	
36'																	
1'+																	
Coal																	
N1																	
3' 6"																	
Sts																	
S 5Y 6/1																	
3' 0"																	
Ls																	
S N4																	
5' 0"																	
St sh																	
S 5Y 6/1																	
0' 1"																	
St sh																	
S N2																	
21' 0"																	
Sts																	
9' 0"																	
S N4																	
Cs																	
12' 0"																	
G N4																	
Coal																	
0' 6 1/2"																	
22-28 1/2																	
S N1																	
Coal																	
0' 8 1/2"																	
13 1/2-22																	
S N1																	
Cs																	
0' 1 1/2"																	
S N2																	
Coal																	
1' 0"																	
0-12																	
S N1																	
Uc																	
2' 4 1/2"																	
Coal																	
0' 6 1/2"																	
22-28 1/2																	
S N1																	
Coal																	
0' 8 1/2"																	
13 1/2-22																	
S N1																	
Cs																	
0' 1 1/2"																	
S N2																	
Coal																	
1' 0"																	
0-12																	
S N1																	
Uc																	
2' 4 1/2"																	
Coal																	
0' 6 1/2"																	
22-28 1/2																	
S N1																	
Coal																	
0' 8 1/2"																	
13 1/2-22																	
S N1																	
Cs																	
0' 1 1/2"																	
S N2																	
Coal																	
1' 0"																	
0-12																	
S N1																	
Uc																	
2' 4 1/2"																	
Coal																	
0' 6 1/2"																	
22-28 1/2																	
S N1																	
Coal																	
0' 8 1/2"																	
13 1/2-22																	
S N1																	
Cs																	
0' 1 1/2"																	
S N2																	
Coal																	
1' 0"																	
0-12																	
S N1																	
Uc																	
2' 4 1/2"																	
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SITE/STATION NO.		85-4		LAT °N.		40°53'48"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING					
COAL SAMPLE NO.(S)				LONG °W.				78°17'13"				TWP.				Decatur					
COMPANY				GEOLOGIST				tmb				15' QUADRANGLE				Houtzdale					
MINE				PERMIT 4 of 1967				DATE 7-28-67				7 1/2' QUADRANGLE				Wallacetown					
COAL(S) REPORTED Upper Kittanning (C ¹) and Lower Freeport (D).																					
S T R A T I G R A P H I C D A T A																					
GROSS UNIT		LITHOLOGY	INTERVAL (SJB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	45'																				
0	12'+	Ss				N7											Fissile; beds 3" - 4'; slabby, blocky; mica 1 - 3, c; medium-grained, good to excellent sorting, sub-rounded, clay matrix.				
9	5' 0"	Cs			G	N4											Silty; frag's. - 1/2"; leaves, rootlets, c; scattered coaly laminae near top, r.				
8	3' 6"	Coal		0-42	S	N1											Weathered. Deep mined. Lower Freeport (D) coal.				
7	2' 3"	Uc			S	N6											Frag's. - 1/2"; hackly; plt. frgs., rootlets, a.				
6	0' 9"	Cl sh			S	N1 - N2											Fissile; beds 1/32" - 1/8"; chippy; leaves, rootlets; hard, brittle; carbonaceous.				
5	0' 3"	Coal		0-3	S	N1											Weathered; Cl sh partings, c.				
4	6' 9"	Ss	2' 0"		S	N3 - N5											Subfissile; beds 1/4" - 3"; chippy, rubbly; mica 2, c; rootlets, Stigmara, c; silt to very fine-grained.				
		lss sh	4' 9"		G	N3 - N4											Fissile; beds 1/8" - 1/4"; chippy; mica 2, c; plt. frgs., c; Ss beds to 2", r.				
3	12' 0"	St sh	6' 0"		G	N4											Fissile; beds 1/32" - 1/8"; platy; siderite bands to 1/2" near top, r; mica 1, r; leaves, r.				
		Cl sh	6' 0"		G	N3											Silty; fissile; beds 1/32" - 1/8"; platy; mica 1, r; leaves, r.				
2	2' 2"	Coal	1' 2"	12-26	S	N1															
		Coal	0' 5"	7-12		N1											Bony.				
		Coal	0' 7"	0-7		N1											Upper Kittanning (C ¹) coal.				
1		Uc			S																

SITE/STATION NO.		85-5		LAT °N.		40°51'20"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
COAL SAMPLE NO(S)				LONG °W.				78°20'35"				TWP.				Decatur																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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MINE				PERMIT				59-9				DATE				6-21-67				7 1/2' QUADRANGLE				Houtzdale																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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SITE/STATION NO.	85-6	LAT °N.	40°49'40"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	78°19'15"	TWP.	Woodward	COMMENTS	Contracted to Metro Yebernetsky. Stripping pillars.		
COMPANY	Elliot Coal Mining Co.	GEOLOGIST	wee	15' QUADRANGLE	Houtzdale				
MINE	Metro #2	PERMIT	59-12	7 1/2' QUADRANGLE	Houtzdale				
COAL(S) REPORTED	Lower Freeport (D).								

S T R A T I G R A P H I C										D A T A				C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S		
NUMBER	GROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
							A N T H R A X Y L O N						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% A B U N - D A N C E			T H I C K - N E S S											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
1	26' - 28'																				
5	12'+	Ss				N6													Fissile; beds 1/2" - 3"; slabby, friable; mica l - 2, c; fine-to very fine-grained, subangular, clay matrix; chlorite.		
5	8' 1" - 10' 1"	St sh	2' - 4'			N5													Clayey; fissile beds 1/8" - 1/2"; chippy.		
		St sh	2' 0"		G	N5													Fissile; beds 1/8" - 1/2"; chippy; mica l, c.		
		Cl sh	0' 1"		G	N4													Fissile; beds 1/8" - 1/2"; chippy; mica l, r; plt. frgs., r.		
		Cl sh	4' 0"		G	N2													Fissile; beds 1/8" - 1/2"; hackly; pyrite; plt. frgs., r.		
1	1" - 2"	Coal			S	N1			+		+		D						Shaly.		
3	2' 0"	Cs			S	N2													Silty; subfissile; beds 1/2" - 3"; blocky, rubbly; mica l, r; plt. frgs., leaves, c; N3, upward.		
2	4' 5"	Coal		0-53	S	N1													Lower Freeport (D) coal.		
		Uc			S																

SITE NO. 94-1

SITE/STATION NO. 94-2 (page 1)	LAT °N. 41°05'13"	COUNTY Clearfield	WEATHERING fresh	JOINTING N55°W (Unit 6); N30°W (Unit 2).
COAL SAMPLE NO.(S)	LONG °W. 78°08'56"	TWP. Covington	COMMENTS 55'-60' interval (hand level) between Middle Kittanning (C) coal (Unit 1, site 94-2), and Lower Kittanning (B) coal	
COMPANY River Hill Coal Company	GEOLOGIST adg	15' QUADRANGLE Karthaus	(Unit 1, site 94-1).	
MINE see comments	PERMIT 20-1A 2	DATE 6-7-66	7½' QUADRANGLE Frenchville	Name of Mine: Rollingstone - Beers Strip.
COAL(S) REPORTED Middle Kittanning (C).				

S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES					C O M M E N T S	
NUMBER	GROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)							
							ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)		BRITISH THERMAL UNITS
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
1	2' 10 1/2"	Bone Coal	0' 11" 0' 9"	14 1/2 - 23 1/2	G	NI									D						Blocky.
		Coal	1' 2 1/2"	0 - 14 1/2		NI						+		D							Pyrite at top and bottom. 1/2" soft Sh partings at top. Unit 1: Middle Kittanning (C) coal.

SITE/STATION NO.		94-2 (page 2)		LAT °N.		41°05'13"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING N55°W (Unit 6); N30°W (Unit 2)					
COAL SAMPLE NO.(S)				LONG °W.		78°08'56"		TWP.		Covington		COMMENTS 55' - 60' interval (hand level) between Middle Kittanning (C) coal (unit 1, site 94-2) and Lower Kittanning (B) coal (unit 1, site 94-1).									
COMPANY River Hill Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Karthaus											
MINE See comments		PERMIT 20-1A 2		DATE 6-7-66		7½' QUADRANGLE		Frenchville													
COAL(S) REPORTED				Middle Kittanning (C).								Name of Mine; Rollingstone - Beers Strip									
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	72'																				
12		cover																Soil.			
11	4' 0"	Ss																Beds ½" - 3"; mica, c - r; very fine-grained.			
10	3' 0"	Cl sh			S	5Y 4/1															
9	12' 0"	Cl sh			G													Beds ¼" - ½"; hackly; plt. frgs.			
		Coal	0' 4½"	3-7½	S	N1												Bony.			
		Sh	0' ½"															Parting.			
		Coal	0' 2½"	0-2½		N1								MB							
8	0' 8"	Bone	0' ½"																		
																		Unit 8: Middle Kittanning (C) rider coal.			
7	7' 0"	Cl sh			S													Grades to Uc upward.			
6	15' 0"	lss st			G													Solid, massive; mica and carbonaceous material on bedding planes.			
5	9' 0"	Cs			G													Beds ¼" - 3"; rubbly; plt. frgs.			
4	0' 3"	Sh			S	N1												Nonbanded; blocky.			
3	1' 9"	Bone	1' 5"		S													Tough.			
		Coal	0' 4"	0-4		N1								MB				Banded. Unit 3: Middle Kittanning (C) coal.			
2	18' 0"	lss st			S													Carbonaceous material on bedding planes.			
		Cs				N5 - N3												Siderite nodules; grades to lss st upward. Lingula sp. and Orbiculoidea sp. Unit 2: Jointing is N30°W.			

SITE NO. 94-3

SITE/STATION NO.		94-4		LAT °N.		41°05'29"		COUNTY		Clearfield		WEATHERING		JOINTING		N30°W					
COAL SAMPLE NO(S)				LONG °W.		78°10'38"		TWP.		Covington		COMMENTS									
COMPANY		Robert Bailey Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Karthaus											
MINE		Mt. Pleasant #2		PERMIT		44-13		DATE		6-7-66		7 1/2' QUADRANGLE		Frenchville							
COAL(S) REPORTED		Lower Kittanning (B) and Middle Kittanning (C).																			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	53'																				
11		cover																Soil.			
10	18' 0"	Cl sh				5Y 4/1												Silty; beds 1/2" - 3".			
9	7' 0"	lss st			G	N6												Beds 1' - 2'; solid; mica, a; very fine-grained; massive.			
8	3' 7"	Sh			G	N4												Silty; hackly, rubbly; plt. frgs.; unit becomes 7'+ thick to west.			
7	0' 1 1/2"	Sh			S	N1												Nonbanded; blocky.			
6	1' 11"	Bone	0' 5"		S	N1												Knife-edge parting.			
		Sh															Thin bright streaks.				
		Coal	1' 6"	0-18		N1					MD						Unit 6: Middle Kittanning (C) coal.				
5	2' 6"	cover																Covered interval.			
4	9' 0"	lss st				N6												Beds 1/2" - 3"; siderite nodules; mica, a; very fine-grained; clay matrix, c; carbonaceous.			
3	18' 0"	Cs			G	N3												Beds 1/4" - 3"; hackly; <u>Lingula</u> sp. 2" from bottom; silty and N5 upward.			
2	0' 7 1/2"	Sh			S	N1												Thin coaly streaks.			
1	2' 8"	Coal		0-32	S	N1							D					Bony; pyrite streaks. Lower Kittanning (B) coal.			

SITE/STATION NO.		94-5		LAT °N.		41°01'41"		COUNTY		Clearfield		WEATHERING		JOINTING									
COAL SAMPLE NO(S)				LONG °W.		78°07'16"		TWP.		Cooper		COMMENTS											
COMPANY				Robert Bailey Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Karthaus											
MINE		Miller Job		PERMIT		44-14		DATE		6-9-66		7½' QUADRANGLE		Karthaus									
COAL(S) REPORTED				Clarion.																			
S T R A T I G R A P H I C D A T A																COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SJB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH										
							% ABUN- DANCE	THICK- NESS															
														> 60 30 - 60 15 - 30 0 - 15	> 1/4" 1/8" - 1/4" 1/32" - 1/8" < 1/32"								
T	31' - 37'																						
7		Coal																Blossom.					
6	?	Uc			S																		
5	12' - 18'	Cl sh			G	5GY 4/2												Silty; beds ¼" - ½"; plt. frgs., r.					
4	0' - 6'	Ss			U	N6												Cross-bedding; mica, c; very fine-grained; clay matrix, c; dark minerals, a.					
3	16' 0"	Cl sh			G	N4												Beds 1/8" - ¼"; chippy; thin siderite zones; brachiopods in lower 1' 6"; banded; silty upward.					
2	3' 0"	Coal	0' 9½"	26½-36	S	N1												Bony.					
		Sh	0' 2"			N1												Banded.					
		Coal	0' 11"	13½-24½		N1			MB									Blocky; pyrite.					
		Pyrite & Bone	0' 1½"																				
		Coal	1' 0"	0-12		N1			B									Pyrite and thin Sh partings. Unit 2: Clarion coal.					
1	?	Uc			S																		

SITE/STATION NO.		94-6		LAT °N.		41°01'51"		COUNTY		Clearfield		WEATHERING		JOINTING		N45°W; N10°E.			
COAL SAMPLE NO(S)				LONG °W.		78°07'54"		TWP.		Cooper		COMMENTS		Units 4 - 9		seen on higher cut around hill. Units			
COMPANY		Robert Bailey Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Karthaus				6 - 9, 20'±.					
MINE		PERMIT		Comments		DATE		6-8-66		7 1/2' QUADRANGLE		Frenchville		Permit No.:		N.E. of 20-5, and west of 44-14.			
COAL(S) REPORTED		Clarion.																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)			AIR DRYING LOSS (%)
							% ABUN - DANCE		THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"					
T	50'																		
9		Coal																Blossom. Lower Kittanning (B)? coal.	
8		cover																Soil.	
7		Ss				5Y 4/1												Beds 3" - 1'; very fine-grained.	
6		Cl sh			U	5YR 6/1												Plt. frgs.	
5	1' 6"	Coal		0-18	S	N1												Blossom.	
4	5' 0"	Uc			S													Silty; <u>Stigmara</u> .	
3a	?	Cover																Covered interval.	
3	40' 0"	Cl sh				N4												Beds 3" - 1'; rubbly; siderite nodules; plt. frgs.	
2	3' 5"	Coal	1' 3"	26-41	S	N1												Banded; bony.	
		Sh	0' 2 1/2"															Tough.	
		Coal	0' 10 1/2"	13-23 1/2		N1					D							Thin pyrite partings.	
		Bone	0' 1 1/2"																
2	3' 5"	Coal	0' 11 1/2"	0-11 1/2		N1						MB						Thin Sh and pyrite partings; banded. Unit 2: Clarion coal.	
1		Uc			S														
	Note:																	Interval from unit 5 to unit 9 is approximately 20 feet.	

SITE/STATION NO.		94-7		LAT °N.		41°08'17"		COUNTY		Clearfield		WEATHERING		JOINTING								
COAL SAMPLE NO.(S)				LONG °W.		78°05'44"		TWP.		Karthaus		COMMENTS These 2 sections as drawn by Wilson Everhart										
COMPANY		J. E. Hoffman Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Karthaus		believed in error (original sheet discarded).										
MINE		Gonzales Strip		PERMIT		90-3		DATE		6-21-66		7 1/2' QUADRANGLE		Pottersdale								
COAL(S) REPORTED		Middle Kittanning (C) and Upper Kittanning (C').																				
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON				ASH
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
T 43'																						
4		Coal																Blossom near top of highwall. Upper Kittanning (C') coal.				
3 40' 0"		lss sh St sh			S	N6 N3												Beds 1/4" - 3"; leaves; very fine-grained. Beds 4" - 3"; mica; plt. frgs.; carbonaceous material. Grades to lss sh upward.				
		Bone	0' 7"		S													Thin Sh partings; coal streaks. Tough.				
		Coal	0' 9"	16 -25		N1				MB												
		Bone	0' 1"																			
		Coal	0' 3"	12 -15		N1																
		Sh	0' 1/2"															Parting.				
		Coal	0' 8"	3 1/2 - 11 1/2		N1				MB								Banded.				
		Sh	0' 1"															Parting.				
2 2' 8"		Coal	0' 2 1/2"	0-2 1/2		N1				B								Unit 1: Middle Kittanning (C) coal.				
1		Uc			S	N5												Stigmaria.				

SITE/STATION NO.		94-8		LAT °N.		41°08'30"		COUNTY		Clearfield		WEATHERING		extreme		JOINTING							
COAL SAMPLE NO.(S)				LONG °W.				78°06'00"				TWP.		Karthaus				COMMENTS		Upper Kittanning (C') coal too weathered for anal-			
COMPANY				J. E. Hoffman Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Karthaus				ysis. Unit 1 is probably same as unit 3 at site					
MINE		Gonzales Strip		PERMIT		90-3		DATE		6-21-66		7 1/2' QUADRANGLE		Pottersdale				94-7					
COAL(S) REPORTED				Upper Kittanning (C').																			
S T R A T I G R A P H I C										D A T A				COAL CHEMICAL ANALYSES						C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN -																
							DANCE																

SITE/STATION NO.	94-9	LAT °N.	41°08'32"	COUNTY	Clearfield	WEATHERING		JOINTING	N37°W.
COAL SAMPLE NO.(S)		LONG °W.	78°07'15"	TWP.	Karthus	COMMENTS			
COMPANY	J. E. Hoffman Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Karthus				
MINE	Karthus #2	PERMIT	90-5	DATE	6-21-66	7 1/2' QUADRANGLE	Pottersdale		
COAL(S) REPORTED	Middle Kittanning (C), and Upper Kittanning (C')								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SJB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL					PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON			ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN. DANCE	THICK- NESS											
								> 60	30 - 60						15 - 30				
T	61'																		
9		Coal															A trace of coal blossom at top of highwall.		
8	15' 0"	Cs				N4 - N3											Beds 1/2" - 3"; plt. frgs.		
7	1' 8"	Coal		0-20	S	N1											Thin Sh partings 8" from bottom. Upper Kittanning (C') coal.		
6	10' 0"	Uc			S	5Y 4/1											Silty; equant; <u>Stigmara</u> .		
a	6' 0"	cover															Covered interval.		
5	10' 0"	St sh				N5											Beds 1/2" - 3".		
4	14' 0"	Ss			G	N6											Beds 3" - 1'; cross-beds; mica, r; very fine-grained; dark minerals, r.		
3	0' 10"	Bone			S														
2	2' 1"	Coal		0-25	S	N1					D						Banded. Middle Kittanning (C) coal.		
1	1' 6" +	Uc			S	N7											<u>Stigmara</u> .		

SITE/STATION NO.		94-10		LAT °N.		41°08'16"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING		N38°W									
COAL SAMPLE NO.(S)				LONG °W.				78°04'42"				TWP.				Karthaus				COMMENTS							
COMPANY				R. S. Carlin, Inc.				GEOLOGIST		adg		15' QUADRANGLE		Karthaus													
MINE		Potter Strip		PERMIT		134-7C		DATE		6-21-66		7 1/2' QUADRANGLE		Pottersdale													
COAL(S) REPORTED				Middle Kittanning (C)? and Lower Kittanning (B)?																							
S T R A T I G R A P H I C D A T A																COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS								
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH						
							% ABUN- DANCE			THICK- NESS																	
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"				
T	72'																										
8		Coal																	Blossom at top of highwall.								
7	20' 0"	Ss				5Y 4/1													Beds 1/2" - 3"; mica, c; very fine-grained; grades up-ward to St sh.								
6	3' 5"	Coal	1' 6"	23-41	S	N1													Thin Sh partings.								
		Cl sh	0' 6"		S													Parting.									
		Coal	1' 5"	0-17	S	N1						B						Slightly bony. Unit 6: Middle Kittanning (C) ? coal.									
5	20' 0"	Ss & Sts			S														Beds 1/4"-1/2"; siderite nodules. Grades upward into Uc with a few Ls nodules.								
4	2' 0"	Coal		0-24	S	N1							B						Lower Kittanning (B) rider? coal.								
3	25' 0"	St sh			S	N5													Beds 1/8" - 1/4"; mica, r; plt. frgs., a; siderite bands. Few Ss interbeds, fine-grained, N6; <u>Stigmara</u> at top.								
2	0' 10"	Bone			S														Yellow sulfur stain.								
1	2' 9 1/2"	Coal		0-33 1/2		N1							MB						Banded; weathered. Lower Kittanning (B)? coal.								

SITE/STATION NO. 94-15 (page 1)		LAT °N. 41°09'56"		COUNTY Clearfield		WEATHERING fresh		JOINTING	
COAL SAMPLE NO.(S) 94-C-2, -3		LONG °W. 78°03'05"		TWP. Karthaus		COMMENTS See page 2 (Site 94-15) for continuing stratigraphic			
COMPANY Garden Coal Co.		GEOLOGIST wee		15' QUADRANGLE Karthaus		units 5 - 8.			
LINE # 1		PERMIT 381-1		DATE 6-20-67		7 1/2' QUADRANGLE Pottersdale			
COAL(S) REPORTED Middle Kittanning (C).				Middle Kittanning (C) rider.					

S T R A T I G R A P H I C D A T A																	COAL CHEMICAL ANALYSES					C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
NUMBER	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"										< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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SITE/STATION NO.	94-15 (page 2)	LAT °N.	41°09'56"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	94-C-2, -3	LONG °W.	78°03'05"	TWP.	Karthauss	COMMENTS	See page 1 (Site 94-15) for preceding str.		
COMPANY	Garden Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Karthauss	units 1 - 4, also coal samples 94-C-2, M			
MINE # 1	PERMIT 381-1	DATE 6-20-67	7 1/2' QUADRANGLE	Pottersdale	Kittanning (C), and 94-C-3, Middle Kitta				
COAL(S) REPORTED Middle Kittanning (C), Middle Kittanning (C) rider.					rider.				

S T R A T I G R A P H I C D A T A														C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
T	58'																						
8	7'+	Uc	3'+																				Silty.
		Uc	1' 0"																				Dark.
		Sts	2' 0"																				"Lumpy".
		Uc	1' 0"																				Unit 8: Inaccessible, specific lithologies in question. Dark.
7	10' 0"	Sts	6' 0"			N5																	Fissile; beds 2" - 1'; slabby, blocky; mica l, c; frgs., r; silt to very fine-grained, fair clay matrix, dark minerals.
		Cl sh	4' 0"		G	N4																	Fissile; beds 1/32" - 1/4"; chippy; plt. frgs.
6	0' 1"	Coal		0-1	S	N1																	Extremely friable; "dirty".
5	14' 0"	Sts			S	N3																	Fissile; beds 1/8" - 1/4"; slabby; mica l, c; frgs., leaves, a.
		lss st				N3 - N5																	Fissile; beds 1/8" - 1/4"; slabby; mica l, c; frgs., leaves, a.
		St sh	12' 0"			N3																	Fissile; beds 1/32"-1/8"; chippy; mica l, c; frgs., leaves, a.
		lss sh				N3 - N5																	Fissile; beds 1/32"-1/8"; chippy; mica l, c; frgs., leaves, a. Sts, lss st, St sh, and l are interbedded.
		Ss	1' 0"		S	N5																	One bed, solid; mica l - 2, a; silt to fine-grained, poor sorting.
		Cl sh	1' 0"		S	N2																	

SITE/STATION NO.	94-16	LAT °N.	41°05'53"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING: (coal)	N80°E, N2°E.
COAL SAMPLE NO(S)	94-C-4	LONG °W.	78°09'16"	TWP	Covington	COMMENTS			: (shale) N30°W, N74°E.
COMPANY	Moshannon Falls Min. Co., Inc.	GEOLOGIST	qbg	15' QUADRANGLE	Karthus				Inaccessible. See Site 94-24 (mine permit 13+-14)
MINE	Mt. Carmel #2	PERMIT	5-2	DATE	8-20-68	7 1/2' QUADRANGLE	Frenchville		for details of this highwall.
COAL(S) REPORTED	Middle Kittanning (C) and Middle Kittanning rider.*								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
1	28'																	Coal analyzed M/7-25-69			
3	1' 6" ±	Coal		0 - 18	S	N1												Middle Kittanning (C ₂) coal; bright.			
2	24' 0"	Sh			S																
1	3' 6"	Coal		0-42	S	N1	+	+		+	+	+	MB	0.8	21.6	61.8	15.8	1.59	12679	Upper 3" bony. 94-C-4, Middle Kittanning (C ₁) coal.	
	Note:																			Lower Kittanning (B) to Middle Kittanning (C ₁) interval is 40'. Lower Kittanning coal averages 2' 10" thick. Middle Kittanning (C ₁) to Upper Kittanning (C') interval is 35'. Middle Kittanning coal (C ₁) averages 3' thick. Upper Kittanning (C') to Lower Freeport (D) interval is +50'. Upper Kittanning coal averages 2' 4" thick.	
																				*Survey designation: Middle Kittanning (C), or "split C", including C ₁ and C ₂ .	

SITE/STATION NO.	94-17	LAT °N.	41°00'09"	COUNTY	Clearfield	WEATHERING	moderate	JOINTING: (coal)	N89°W, N17°E.
COAL SAMPLE NO(S)	94-C-5	LONG °W.	78°09'32"	TWP.	Cooper	COMMENTS			
COMPANY	Riverhill Coal Co., Inc.	GEOLOGIST	gbg	15' QUADRANGLE	Karthus				
MINE	Hollenbach	PERMIT	20-14	DATE	8-21-68	7 1/2' QUADRANGLE	Frenchville		
COAL(S) REPORTED	Clarion.								

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES						C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE		THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15										
T	24'																	Coals analyzed M/7-25-69		
2	20'+	cover																Shaly highwall extremely weathered.		
1	3' 7"	Coal	1' 4"	27-43	S	N1	+			+	+	MD	2.8	22.1	45.6	29.4	0.70	9291	Crumbly; weathered too extremely to mine.	
		Cs	0' 3"		S	N1													Parting; beds 1/8" - 1/4"; frag's. - 1/2"; wet.	
		Coal	2' 0"	0-24	S	N1	+			+	+	MB	1.1	21.6	65.5	11.8	1.24	13333	Blocky; mined.	
													1.8	21.8	57.6	18.9	1.02	11716	Seam average of 94-C-5, Clarion coal.	

SITE/STATION NO.		94-18		LAT °N.		41°01'53"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING: (coal)		N25°W, N71°E, N10°W.		
COAL SAMPLE NO(S)		94-C-6		LONG °W.		78°08'50"		TWP		Cooper		COMMENTS						: (shale) N51°E, N37°W.		
COMPANY				Riverhill Coal Co., Inc.				GEOLOGIST		gbg		15' QUADRANGLE		Karthaus		Old strip on Lower Kittanning (B) just over highwall top.				
MINE		Sylvan Grove		PERMIT		20-15		DATE		8-21-68		7 1/2' QUADRANGLE		Frenchville						
COAL(S) REPORTED				Clarion.																
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE									THICK - NESS				
							> 60	30 - 60	15 - 30	0 - 15										
T	57'																			
5	7' +	Uc				N7 - N9													Plastic; solid; rubbly, hackly in places; Fe-stained.	
4	18' 0"	Cs	6' 6"		G	N5 - 5GY 6/1													Silty; beds 1/2" - 1"; hackly, rubbly; limonite nodules to 6", a; shaly near top.	
		Sts	5' 0"		G	N4												Beds 1/2" - 2"; blocky, rubbly; siderite bands to 1 1/2", c; sandy near top.		
		lss st	6' 6"		G	N4 - N5												Beds 1/2" - 1"; blocky, rubbly; siderite nodules to 1", c, to 4", r; mica 2, c; Ss beds to 4" thick near top, c.		
3	0' 10 1/2"	Ls			S	N4													Vanport; silty; solid; reticulated with plastic Cl; micritic; weathers 10YR 6/2.	
2	27' 8"	Sts	4' 3"		S	N3 - N4													Clayey; blocky; siderite nodules to 1", c - r; mica 1, c; plt. frgs., leaves, a.	
		lss st	10' 6"		G	N4 - N5												Beds 1/2" - 1"; slabby, rubbly; mica 1, c; leaves, a; -10% sand laminae; 1" thick Ss beds, very fine-grained, near top, r.		
		Sts	8' 0"		G	N3 - N4												Beds 1/2" - 2"; hackly, rubbly; siderite nodules to 1", c - r; mica 1, c; plt. frgs., c - r.		
		lss st	3' 5"		G	N4 - N5												Beds 1/2" - 2"; flaggy, blocky; siderite bands - 1/4", c; mica 1, c; plt. frgs., c - r; -25% silt lenses - 1/8" thick.		
		Sts	1' 6"		G	N3 - N4												Clayey; beds 1/2" - 2"; slabby, rubbly; siderite nodules - 1/2", a; pyrite nodules at bottom, r.		
1	3' 5"	Coal	1' 4"	25-41	S	N1		+	+		+	MD	0.7	19.4	52.9	27.0	1.89	11130	White sulfur flowers, c.	
		Cs	0' 2 1/2"		S	N1													Parting; frag's. - 1/2"; hackly; plt. frgs., c.	
		Coal	1' 10 1/2"	0-22 1/2	S	N1		+			+	+	MB	0.8	22.5	66.4	10.3	3.94	13502	White sulfur flowers, c.
														0.8	21.2	60.8	17.2	3.09	12516	Seam average of 94-C-6, Clarion coal.

SITE/STATION NO.		94-19		LAT °N.		41°04'38"		COUNTY		Clearfield		WEATHERING		slight		JOINTING: (Coal)		N86°E, N9°W.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
COAL SAMPLE NO(S)		94-C-7		LONG °W.		78°09'26"		TWP.		Covington		COMMENTS				: (Shale)		N55°E, N35°W.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
COMPANY		Riverhill Coal Co., Inc.		GEOLOGIST		qbg		15' QUADRANGLE		Karthaus						: (Cs)		N35°W, N55°E.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
MINE		Tuffy strip		PERMIT		20-16		DATE		8-20-68		7 1/2' QUADRANGLE		Frenchville				Shale jointing: 9' - 20' apart.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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SITE/STATION NO.		94-20 (page 2)		LAT °N.		41°04'58"		COUNTY		Clearfield		WEATHERING		slight		JOINTING: (coal)		N87°E, N5°W.																					
COAL SAMPLE NO(S)		94-C-8		LONG °W.		78°09'41"		TWP.		Covington		COMMENTS						: (shale) N47°W, N45°E, N30°W.																					
COMPANY		Robert Bailey Estate		GEOLOGIST		qbg		15' QUADRANGLE		Karthaus								: (cleat) N50°E @ 55° dip (coal)																					
MINE		Mt. Pleasant		PERMIT		44-9C		DATE		8-21-68		7 1/2' QUADRANGLE		Frenchville				Units 9 - 13 inaccessible. See Site 94-20 (page 1)																					
COAL(S) REPORTED		Lower Kittanning (B).																for preceding stratigraphic units 0 - 4.																					
S T R A T I G R A P H I C										D A T A										COAL CHEMICAL ANALYSES										C O M M E N T S									
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				MOISTURE	VOLATILE		FIXED CARBON	ASH																								
							% ABUN - DANCE		THICK - NESS																														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																									
T	53'																																						
		cover																						Spoils.															
12	1' 6"	Coal		0-18		N1																		Extremely weathered, may be somewhat slumped.															
11	0' 6"+	Uc				10YR 6/2																		Plastic.															
10	5' 6"																							Covered interval. Probably a Ss grading upward to an Uc.															
	6' 0"	Ss				N7																		Beds 1" - 4"; flaggy; cross-bedding; mica 2, c; very fine- to fine-grained, fair sorting, subangular, clay matrix, dark minerals, r; Fe-stain, c.															
8	9' 0"	St sh	3' 8"		S	N4																		Beds 1/8" - 1/4"; fissile; platy; mica 1, a; sand laminae -1/64", r; moderately weathered.															
		Cl sh	1' 7"		G	N1 - N3																		Beds 1/32" - 1/8"; fissile; platy, chippy; siderite lenses to 2" thick by 3' long, c; extremely weathered.															
		Iss sh	0' 11"		G	N4 - N5																		Beds 1/4" - 1/2"; platy; predominantly St sh at upper and lower portions, balance of equal proportions.															
		St sh	0' 8"		G	N4																		Beds 1/8" - 1/2"; fissile; platy; siderite lenses -1/2" thick, r.															
		Is c sh	1' 3"		G	N3 - N4																		Beds 1/32" - 1/8"; fissile; platy, chippy; siderite lenses to 1/2", c; leaves, r; conchostracans, a.															
		Cl sh	0' 11"		G	N1																			Beds 1/8" - 1/4"; fissile; platy, equant; siderite nodules to 1 1/2", c; lenses, r; leaves, c; carbonaceous.														
7	0' 5"	Coal		0-5	S	N1	+				+			MB										Crumbly and bright.															
6	5' 8"	Cs			S	N3 - N4																		Solid, frag's. -1/2"; hackly; leaves, a; breaks into angular but soft fragments; silty at bottom.															

ITE/STATION NO.	94-21 (page 1)	LAT °N.	41°00'23"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING: (coal)	N89°W, N70°E.
COAL SAMPLE NO(S)	94-C-9, -10	LONG °W.	78°10'49"	TWP.	Graham	COMMENTS			; (shale) N6°W, N48°W.
COMPANY	Robert Bailey Estate	GEOLOGIST	gbg	15' QUADRANGLE	Karthauss	See Site 94-21 (page 2) for continuing stratigraphic units 5 - 10.			
LINE	Moore strip	PERMIT	44-18	DATE	8-21-68	7½' QUADRANGLE	Frenchville		
COAL(S) REPORTED	Clarion coals.								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
																		Coals analyzed M/7-25-69			
	1' 9"	Coal		0-21	S	N1			+	+		+		MD	0.9	18.6	49.6	30.9	2.74	9969	94-C-10, Clarion coal. White sulfur flowers, c; pyrite lenses to 1" thick, c.
	1' 6"	Cs				N1 - N3															Parting; frag's. -1/8"; hackly; leaves, trunks, rootlets, c; siderite lenses 2" thick by 8" long just over coal.
	1' 8"	Coal		0-20		N1			+			+		MD - MB	0.8	21.0	62.5	15.6	1.96	12655	94-C-9, Clarion coal. White sulfur flowers, c.
		Uc				N3 - N4															Frag's. -1/2".

SITE/STATION NO.		94-21 (page 2)		LAT °N.		41°00'23"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING: (coal) N89°W, N7°E.				
COAL SAMPLE NO.(S)		94-C-9, -10		LONG °W.		78°10'49"		TWP.		Graham		COMMENTS		: (shale) N6°W, N48°W.						
COMPANY		Robert Bailey Estate		GEOLOGIST		gbg		15' QUADRANGLE		Karthaus		See Site 94-21 (page 1) for preceding stratigraphic units 1 - 4.								
MINE		Moore strip		PERMIT		44-18		DATE		8-21-68		7 1/2' QUADRANGLE		Frenchville						
COAL(S) REPORTED		Brookville (A), upper and lower aspects.																		
S T R A T I G R A P H I C D A T A												C O A L C H E M I C A L A N A L Y S E S				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN- DANCE	THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"						
T	47'																			
10	20'+																			Cs, Sts, and Sh. Inaccessible.
9	6' 5"		1' 0"																	Limonite. Plastic zone; inaccessible.
		Sts	3' 0"		G	N5														Beds 1/2" - 1"; frag's. + 1/2"; rubbly; limonite nodules 2", c; Fe-stain, c; clayey in places.
		Ss	2' 5"		G	N7														Beds 3" - 2'; solid; blocky; plt. frgs., r; fine-grained, fair sorting, subangular, clay matrix, dark minerals, c; massive.
8	2' 4"	St sh	1' 2"		U	N4														Beds 1/4" - 3/4"; platy, blocky.
		Cs	1' 2"		G	N5														Beds 1/4" - 4"; plastic; platy to hackly; weathered Cs; damp.
7	1' 6"	Ss			G	N5 - 5YR 4/1														Beds 1/2" - 1"; platy; siderite bands to 3/4" thick, c; plt. frgs., c; very fine- to fine-grained, fair sorting, subangular, clay matrix; sulfur coating; silt laminae to 1/4" thick; damp.
6	0' 4"	Coal		0-4	S	N1	++				++	MB								
		Sts	2' 6"		S	N4														Beds 1" - 1"; slabby, blocky; plt. frgs., leaves, c; a; massive in places; 1" - 2" Ss beds, c; Unit 5 capped by 1" Ss bed, N7, very fine-grained.
		Iss st	6' 6"		G	N5 - N7														Beds 1/2" - 6"; slabby, rubbly; siderite nodules - 1/2", c - r; plt. frgs. on silty laminae, a; sand laminae - 1/16" thick, c (to 1" thick, r).
5	11' 6"	Sts	1' 0"		G	N5														Beds 1/2" - 6"; blocky; plt. frgs., r.
		Cs	1' 6"		S	N4 - N5														Beds 1/4" - 3"; rubbly; siderite nodules, lenses - 1/2" thick, r - c; mica 2, r; plt. frgs., r; silty upwa

E/STATION NO. 94-22 (page 1)		LAT °N. 41°08'11"		COUNTY Clearfield		WEATHERING fresh		JOINTING: (Shale) N38°W, 50'+ long.													
AL SAMPLE NO(S) 94-C-11, -12		LONG °W. 78°04'20"		TWP. Karthaus		COMMENTS Inaccessible above unit 16, but Ss apparently is															
MPANY Jas. E. Hoffman Coal Co.		GEOLOGIST gbg		15' QUADRANGLE Karthaus		overlain by a Cs or Sts, hackly, N1 - N3. See															
IE Bedford strip		PERMIT 90-2C (1)		DATE 8-9-68		7 1/2' QUADRANGLE Pottersdale		Site 94-28 (mine permit 90-2C (2)). See Site 94-22													
AL(S) REPORTED		Middle Kittanning (C)		and Upper Kittanning (C').		(page 2) for continuing stratigraphic units 8 - 15.															
S T R A T I G R A P H I C D A T A						COAL CHEMICAL ANALYSES					C O M M E N T S										
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE			THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						1/32" - 1/8"				
																			Coal analyzed M/7-25-69		
7' 0"	Sts & Cs			S	N3 - N5														Interbedded; frag's. 1/2'+; hackly, rubbly; siderite nodules to 8"; rootlets, <u>Stigmaria</u> , c; irregular lenticular beds; sandy in places.		
1' 0"	Ss			G	N5 - 5GY 8/1														Solid; rubbly; very fine-grained, subrounded, clay matrix; hard.		
6' 0"	Cs			S	N4 - N5														Silty; frag's. +1/2"; blocky, rubbly; siderite nodules, lenses to 2", c; rootlets, <u>Stigmaria</u> , a; conchoidal fracture.		
8' 5"	lss st	7' 0"		G	N5 - N7														Subfissile; beds 1/2"-6"; slabby, blocky; siderite nodules, lenses to 2", a; beds lenticular on small scale; Ss beds to 2" thick, with laminae top and bottom, composed of very fine-grained, fair sorting, subangular, with clay matrix.		
	lsc sh	0' 8"		G	N3 - N4														Subfissile; beds 1/8" - 1/2"; platy; siderite lenses to 1/2", c; leaves, c.		
	Cl sh	0' 9"		G	N3 - N4														Subfissile; beds 1/32" - 1/2"; platy, chippy; leaves, seeds?, c.		
0" - 3"	Cl sh			G	N1														Subfissile; beds 1/4" - 3"; blocky; disseminated pyrite; carbonaceous; very tough and hard.		
2' 3"	Coal	0' 3"	24-27	S	N1				+	+	+		D						Bony; shale lenses to 1", c.		
	Coal	2' 0"	0-24	G	N1		+			+	+	+	MB								
		Total	0-27											2.0	21.2	63.6	13.2	0.96	12752	94-C-11, Middle Kittanning (C) coal.	
	Cs			S	5YR 4/1															Hard.	

SITE/STATION NO.		94-22 (page 2)		LAT °N.		41°08'11"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING: (Shale) N38°W, 50'+ long.							
COAL SAMPLE NO.(S)		94-C-11, -12		LONG °W.		78°04'20"		TWP.		Karthaus		COMMENTS		Inaccessible above unit 16, but Ss apparently is									
COMPANY		Jas. E. Hoffman Coal Co.		GEOLOGIST		gbg		15' QUADRANGLE		Karthaus		overlain by a Cs or Sts, hackly, N1 - N3. See											
MINE		Bedford strip		PERMIT		90-2C (1)		DATE		8-9-68		7 1/2' QUADRANGLE		Pottersdale		Site 94-28 (mine permit 90-2C (2)). See Site 94-2							
COAL(S) REPORTED		Middle Kittanning (C)		and Upper Kittanning (C')										(page 1) for preceding stratigraphic units 1 - 7.									
S T R A T I G R A P H I C D A T A																COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN - DANCE																
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
Coal analyzed M/7-25-69																							
T	68'																						
16	4'+	Ss				N7												Beds 1' - 4'+; blocky; mica 2 - 3, c - a; very fine-grained, fair sorting, subangular, clay matrix; massive.					
15	5' 5"	Cs	2' 5"		U													Color: gn. - very lt. gr.; plastic; silty; frag's. + ₂ hackly; Fe-stain, a.					
		Sts	3' 0"		G												Color: gn.; solid; frag's. + ₂ "; rubbly; irregular bedded; Fe-stain, a.						
14	5' 1"	lss sh	2' 1"		G													Color: gn. - bn.; fissile; beds 1/8" - 1/2"; platy; limonite zones to 1" thick; especially sandy at top					
		St sh	1' 6"		G												Color: dark gn. - bn.; fissile; beds 1/8" - 1/4"; platy; siderite lenses to 1/2" thick, c; Cl sh laminae, r.						
		Cl sh	1' 6"		G												Color: dark gn. - bn.; fissile; beds 1/32" - 1/4"; platy; leaves, r - c; siderite lenses to 1/2" thick,						
13	3' 4"	Sts			S	N5												Clayey; solid; frag's. + ₂ "; rubbly; siderite nodules to 8", c; rootlets, a.					
12	14' 0"	Ss			S	N7 - 5B 7/1												Beds 3" - 3'; slabby, blocky; vague cross-bedding; mica 2 - 3, c - a; branches, r; very fine- to fine grained, fair sorting, subangular, clay matrix.					
11	2' 0"	lss sh	0' 8"		S	N4 - N5												Beds 1/8" - 3"; platy, flaggy; Ss is very fine-grained					
		St sh	0' 8"		G	N4											Beds 1/8" - 3"; platy, flaggy.						
		Cl sh	0' 8"		G	N3											Beds 1/8" - 3"; platy, flaggy.						
10	3' 3 1/2"	Coal	1' 5"	22 1/2 - 39 1/2	S	N1	+		+	+	MB							Sulfur, a; fusain partings to 1/4", a.					
		Cl sh	0' 1"		S	N1												Beds 1/32" - 1/4"; papery, chippy; leaves, a.					
		Coal	1' 9 1/2"	0 - 21 1/2	S	N1	+		+	+	MB							Sulfur, a.					
9	2' 0"		Total	0 - 39 1/2								1.4	22.8	64.9	10.9	1.68	13260	94-C-12, Upper Kittanning (C') coal.					
																		Covered interval. Possibly hackly Cs, or underclay.					
8	4' 0"	Ls			?	N4 - N5												Johnstown limestone; beds 3" - 4', solid; micritic; blocky; nodular at bottom; shaly zone, r.					

SITE/STATION NO. 94-23 (page 1)			LAT °N. 41°06'14"			COUNTY Clearfield			WEATHERING moderate			JOINTING: (shale) N37°W, N79°E.																																
COAL SAMPLE NO(S) 94-C-13, -14, -15			LONG °W. 78°06'58"			TWP. Karthaus			COMMENTS *Survey identification: Middle Kittanning (C), or "split C" including C1 and C2 and Middle Kittanning rider.																																			
COMPANY R.S. Carlin, Inc.			GEOLOGIST gbg			15' QUADRANGLE Karthaus																																						
LINE see comments			PERMIT 134-7			DATE 8-21-68			7 1/2' QUADRANGLE Karthaus			Kittanning rider.																																
COAL(S) REPORTED Middle Kittanning (C), Upper Kittanning (C') and Upper Kittanning rider.									Name of mine: Potter, Bigler and Potter																																			
S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES															C O M M E N T S														
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																									
INTERVAL (TOTAL)	ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH																																	
	% ABUN - DANCE																																											
	> 60											30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"					1/32" - 1/8"	< 1/32"																						
Coals analyzed M/7-25-69																																												
10' 1"	Sts	1' 9"		G	5GY 6/1-N5													Frag's. 1/2"; hackly, rubbly; limonite septarian nodules to 8", c; silt laminae, r.																										
	St sh	4' 0"		G	N5 - 5GY 6/1													Clayey; fissile; beds 1/8" - 1/4"; platy; oscillation ripple marks; limonite septarian nodules, lenses to 1", c.																										
	Cl sh	4' 0"		G	N3 - N4													Fissile; beds 1/32" - 1/8"; platy, chippy; leaves, r.																										
	Cl sh	0' 4"		G	N1													Fissile; beds 1/32" - 1/8"; platy; mica l, a; leaves, r; carbonaceous r - c.																										
2' 0"	Coal		0-24	S	N1	+				+	MB	3.0	21.8	64.0	11.2	0.52	12534	Silt on joint faces. 94-C-14,* Middle Kittanning (C2) coal.																										
5' 0"	Cl sh	0' 7"		S	N1													Fissile; papery; mica l, a; pyrite "grains" - 1/4", c; white sulfur coating, a; silty.																										
	Sts	2' 10"		S	N3 - N4													Frag's. - 1/2"; hackly; siderite nodules - 1", r; plt. frgs., c; rootlets, r.																										
	Ss	1' 7"		G	N5 - 5GY 6/1													Solid, frag's. + 1/2"; rubbly; rootlets, r; -10% silt laminae; Fe-stain on joint surfaces, a; irregular bedding.																										
17' 1"	Iss sh	3' 0"		G	N4 - N5													Beds 1/32" - 1/8"; fissile; papery, platy; plt. frgs., c; -25% sand.																										
	Ss	1' 6"		G	N4 - N5													Subfissile; beds 1/4" - 4"; platy, slabby; mica 2, a; very fine-grained; -50% sand; silt laminae to 1/16" thick; thin bedded.																										
	Iss sh	6' 0"		S	N4 - N7													Fissile; beds 1/8" - 1/4"; platy; plt. frgs., c; -25% sand, increases upward.																										
	St sh	6' 0"		G	N3 - N4													Fissile; beds 1/32" - 1/8"; papery, platy; siderite nodules to 2", c; mica l, a; leaves, c; extreme sulfur coating.																										
	Cl sh	0' 7"		G	N1 - N3													Fissile; beds 1/32" - 1/8"; chippy; leaves, c; Lingula sp., 1/16" long, c; siltier upward.																										
2' 11"	Coal		0-35	S	N1	+	+			+	+	MD -D	1.3	20.2	60.7	17.8	1.34	12268	Unit 1: White sulfur powder, c; soil on joint surfaces. 94-C-13, * Middle Kittanning (C2) coal.																									

SITE/STATION NO.		94-23 (page 2)		LAT °N.		41°06'14"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING: (shale) N37°W, N79°E.							
COAL SAMPLE NO(S)		94-C-23, -14, -15		LONG °W.		78°06'58"		TWP.		Karthaus		COMMENTS		*Survey identification: Middle Kittanning (C), or "split C" including C1 and C2 and Middle Kittanning rider.									
COMPANY		R.S. Carlin, Inc.		GEOLOGIST		gbg		15' QUADRANGLE		Karthaus													
MINE see comments		PERMIT 134-7		DATE		8-21-68		7 1/2' QUADRANGLE		Karthaus													
COAL(S) REPORTED		Middle Kittanning (C), Upper Kittanning (C') and Upper Kittanning rider.										Name of mine: Potter, Bigler and Potter.											
S T R A T I G R A P H I C D A T A																COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"										< 1/32"
Coals analyzed M/7-25-69																							
T	101' - 104'																						
		Ss	38' 6"			N5 - N7												Beds 1" - 1'; flaggy, slabby; vague cross-bedding; limonite septarian nodules, r; mica 3, a; branches, r; fine-grained, fair sorting, subangular, clay matrix; coaly laminae on bedding planes; more rubbly near top.					
11	38' 6"	Ss	0" - 1' 4"		G	N3 - N5												Solid, frag's. + 1/2"; rubbly; mica 1, c; branches, c; fine-grained, poor sorting, subangular, clay matrix; coaly material, c; irregular channel bottom.					
10	0" - 3' 5"	St sh			U	N4												Beds 1/8" - 1/4"; platy; leaves, a; branches, c; conchospirals, c; replaced in most places by Ss of Unit 1.					
9	1' 2"	Coal		0-14	S	N1	+	+		+	+	MB	1.3	20.8	58.2	19.7	0.56	11808 94-C-15,* Middle Kittanning rider coal; mined.					
8	8' 0"	Uc			S	N7 - 5GY 6/1												Solid, frag's. - 1/2"; hackly; weathered Cs; partially covered.					
		Ss	0' 2"		S	5GY 6/1 - N5												Solid; flaggy; very fine-grained, fair sorting, subangular, clay matrix; one or two separate beds.					
7	5' 8"	Sts	5' 6"		S	5GY 4/1												Frag's. 1/2"; hackly, rubbly; limonite lenses, nodules, c; shaly.					
		Ss	4' 0"		G	N5												Beds 2" - 6"; flaggy, blocky; mica 2, c; very fine-grained, fair sorting, subangular, clay matrix, clay galls, r; Cs nodules to 8", r; silt laminae, r; some St sh to 6" thick.					
6	11' 0"	Ss	7' 0"		G	10YR 6/2 - N5												Beds 1/2" - 2"; flaggy, slabby; mica 2, c; very fine-grained, fair sorting, subangular, clay matrix; even bedded.					

SITE NO. 94-24 (page 1)

SITE/STATION NO.	94-24 (page 2)	LAT °N.	41°06'43"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING: (shale) N42°W, N53°E.
COAL SAMPLE NO.(S)	94-C-16, -17	LONG °W.	78°09'15"	TWP.	Covington	COMMENTS	*Survey identification: Possibly Middle Kittanning	
COMPANY	R. S. Carlin, Inc.	GEOLOGIST	gbg	15' QUADRANGLE	Karthus	(C2) and Middle Kittanning rider.		
MINE	Grimes Run strip	PERMIT	134-14	DATE	8-20-68	7 1/2' QUADRANGLE	Frenchville	Jointing: (coal) N80°E, N6°W.
COAL(S) REPORTED	Middle Kittanning (C) and rider.*							

S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE				THICK - NESS		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	28'																	Coal analyzed M/7-25-69			
9		cover																Spoils.			
8	2'+	Ss	1'+			5YR 6/1 N7												Beds 1" - 2"; flaggy; mica 3, c; plt. frgs., c - r; fine-grained, fair sorting, subangular, clay matrix; Fe-stained.			
		Ss	1' 0"	G	N5 - 5YR 6/1													Frag's. +1/2"; rubbly; siderite nodules to 1/2", c; mica 3, c; fine-grained, fair sorting, subangular, clay matrix & galls; shale fragments to 3/4", c.			
7	2" - 4"	St sh			U	N1 - 5Y 2/1												Beds 1/32" - 1/4"; platy, chippy; tough.			
6	1' 10"	Coal		0-22	S	N1	+				+	+	MD MB	0.9	24.1	59.1	16.0	3.16	12728	Bright overall; 1 1/2" bone at 2" from top of coal. 94-C-17, Middle Kittanning rider coal.	
5	6' 3"	Sts	1' 8"		S	N4 - N6														Frag's. +1/2"; rubbly; leaves, trunks, c, rootlets, a; sand lenses -1/16" thick near bottom; slabby where sandy.	
		St sh	4' 7"	G	N5															Beds 1/4" - 1"; platy, rubbly; plt. frgs., c; tough.	
4	6' 10"	Ss	3' 10"		S	N5 - N7														Beds 1" - 6"; flaggy, slabby; mica 2 - 3, a; plt. frgs. r; very fine-grained, fair sorting, subangular, clay matrix; even-bedded.	
		Ss	3' 0"	G	N4 - N5															Beds 1/4" - 3"; slabby, blocky; mica 2 - 3, a; plt. frgs. c; very fine-grained, fair sorting, subangular, clay matrix; thin-bedded; coaly on bedding planes; less silt upward.	
3	3' 2"	lss st			G	N4 - N5														Beds 1/2" - 2"; slabby; very fine-grained sand; +50% silt with sand lenses, c.	

SITE NO. 94-25

SITE/STATION NO.		94-26 (page 1)		LAT °N.		41°09'21"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING:		(Shale) N56°W						
COAL SAMPLE NO.(S)		94-C-19		LONG °W.		78°06'32"		TWP.		Karthaus		COMMENTS		Jointing:		(Coal) N38°W, N87°W, N82°E, N9°W, N10°E								
COMPANY		Philip Reese Coal Co.		GEOLOGIST		gbq		15' QUADRANGLE		Karthaus														
MINE		Reese #1		PERMIT		156-1C		DATE		8-20-68		7 1/2' QUADRANGLE		Pottersdale										
COAL(S) REPORTED		Lower Kittanning (B).																						
S T R A T I G R A P H I C D A T A																								
GROSS UNIT																								
NUMBER	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S							
							ANTHRAXYLON						ATTRITUS LUSTER	PROXIMATE (%)										
							% ABUN - DANCE			THICK - NESS				MOISTURE	VOLATILE	FIXED CARBON					ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"												
		Coal	0' 6"	39 1/2 - 45 1/2	S	N1				+		+		D						Bone; black fissile clay shale interlaminated with coal; not mined.				
		Coal	1' 3"	24 1/2 - 39 1/2		N1			+			+		B						Pyrite nodules, r.				
		Coal	0' 3"	21 1/2 - 24 1/2		N1				+		+		D						Stands out like a parting.				
2	3' 9 1/2"	Coal	1' 9 1/2"	0 - 21 1/2		N1	+					+		MB	0.9	22.0	65.7	11.4	1.65	13236 Pyrite lenses 1/2" thick by 6" long, and nodules to 3", Channel sample, 94-C-19, Lower Kittanning (B) coal. Equivalent to unit 2, Site 94-28 (mine permit 147-3a				
1		Cs			S	N1 - N3														Frag's. - 1/2"; hackly; pyrite laminae 1/4" - 1" at top, a.				

SITE/STATION NO. 94-26 (page 2)		LAT °N. 41°09'21"		COUNTY Clearfield	WEATHERING fresh	JOINTING: (Shale) N56°W.
COAL SAMPLE NO.(S) 94-C-19		LONG °W. 78 06'32"		TWP Karthaus	COMMENTS Jointing: (Coal) N38°W, N87°W, N82°E, N9°W, N1°E.	
COMPANY Philip Reese Coal Co.		GEOLOGIST gbg	15' QUADRANGLE Karthaus			
MINE Reese # 1		PERMIT 156-1C	DATE 8-20-68		7 1/2' QUADRANGLE Pottersdale	
COAL(S) REPORTED		Lower Kittanning (B).				

S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES					C O M M E N T S			
NUMBER	GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
								ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE				FIXED CARBON	ASH
								% ABUN-DANCE			THICK-NESS											
								> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
1	32'																					
7	1' 1" - 1' 8"	Coal	3" - 5"	15-20	S	N1					+		+		MD - D							
		Cs	3" - 8"		S	N1																
		Coal	0' 7"	0-7	S	N1					+		+		MB MD							
5	0' 5"	Uc			S	N5 - 5YR 2/1																Plastic; frag's. -1/2"; hackly.
5	8' 0"	St sh & Cl sh			S																	Interval increases to 24' toward east end (500'), as unit 3 decreases to 4' thick.
4	1' 0"	Coal			S	N1				+	+		+		MB MD							
		Cl sh			S	N1 - 5Y 2/1																Parting; subfissile; beds 1/8" - 1/4"; chippy, hackly; thin coal stringers, r.
		Coal			S	N1					+			+	D							Bony; dirty, blocky.
																						Unit 4: A rider coal with thickness increasing to 1' 4" 500' to the east. Equivalent to unit 4, Site 94-28 (mine permit 147-3a).
3	19' 6"	lsc st			S	N3 - N5																Subfissile; hackly, rubbly; leaves, a; plt. frgs., c; very irregular to massive bedded. This 4' unit replaces the lower 19' 6" unit to the west.
		Sts	4' 6"		S	N3																Frag's. 1/2"; hackly, rubbly; siderite nodules, to 1", r; rootlets, c. Grades laterally to the east, to the above 4' 0" Sts.
		St sh	13' 0"		G	N3 - N4																Subfissile; beds 1/4" - 1/2"; platy; siderite nodules, bands to 1", a; leaves, a; becomes more fissile upward.
		Cs	2' 0"		G	N1 - 5YR 2/1																Frag's. +1/2"; rubbly; siderite nodules to 1", c; leaves, a; 1/16" coal laminae, c.
																						Unit 3: Unit grades laterally to 4' of lsc st to the east (see description above Sts of Unit 3).

SITE/STATION NO.		94-28 (page 1)		LAT °N.		41°09'19"		COUNTY		Clearfield		WEATHERING		moderate		JOINTING : (Coal)		N80°E, N1°E, N19°W.	
COAL SAMPLE NO (S)				LONG °W.		78°06'08"		TWP.		Karthaus		COMMENTS						(Shale) N34°W, N70°E.	
COMPANY		John E. Teeter Coal Co.		GEOLOGIST		gbg		15' QUADRANGLE		Karthaus									
MINE		PERMIT 147-3A		DATE 8-20-68		7 1/2' QUADRANGLE		Pottersdale										For west end of highwall and sketch, see Site 94-26 (mine permit 156-1C).	
COAL(S) REPORTED		Lower Kittanning (B).																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL					PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON			ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN-DANCE	THICK-NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"					
6	11' 6"	lss st	3' 0"		G	N3 - N5													Subfissile; beds 1/4" - 6"; blocky, rubbly; rootlets, a (top only); +50% sand; irregular bedding.
		lss sh	6' 6"		G	N3 - N5													Fissile; beds 1/8" - 1/2"; platy; siderite nodules, lenses to 1" in lower 2'; rootlets r; leaves, c; -25% sand laminae.
		lss sh	2' 0"		G	N3 - N4													Fissile; beds 1/4" - 1/2"; platy; sand lenticles to 1/4" thick, increases upward.
5	1' 7"	St sh	0' 7"		G	N4													Fissile; beds 1/8" - 1/2"; platy; clay laminae near middle and top, r.
		Cl sh	0' 7"		G	N3 - N4													Silty; subfissile; beds 1/8" - 1/4"; platy, chippy (in places).
		St sh	0' 5"		G	N3 - N4													Subfissile; beds 1/32" - 1/8"; papery, chippy; mica l. a; carbonaceous; plt. frgs., c; pyrite specks, c.
4	0' 11"	Coal	0' 2"	9-11	S	N1		+	+		+				MB				
		Cl sh	0' 3"		S	N1 - 5Y 2/1										MD			Parting; subfissile; beds 1/8" - 1/4"; chippy, hackly; thin coal stringers, r.
		Coal	0' 6"	0-6	S	N1			+			+	D						Bony; dirty; blocky.
																			Unit 4: Lower Kittanning (B) rider coal. Equivalent to unit 4, Site 94-26 (mine permit 156-1C).
3	4' 0"	lsc st			G	N3 - N5													Plastic; beds 1/8" - 4"; leaves, a, plt. frgs., c; very irregular to massive bedded.
2	3' 9 1/2"	Coal	0' 6"	39 1/2-45 1/2	S	N1			+		+				D				Bone (black fissile Cl sh interlaminated with coal). Not mined.
		Coal	1' 3"	24 1/2-39 1/2		N1		+			+				B				Pyrite nodules, r.
		Coal	0' 3"	21 1/2-24 1/2		N1			+		+				D				Bone; stands out as parting.
		Coal	1' 9 1/2"	0-21 1/2		N1		+			+				MB				Bone; pyrite lenses to 1/2" x 6" and nodules to 3", c; Unit 2: Lower Kittanning (B) coal. Equivalent to unit 2, Site 94-26 (mine permit 156-1C).
1		Cs			S	N1 - N3													Frag's. -1/2"; hackly; pyrite laminae 1/4" - 1".

SITE/STATION NO. 94-28 (page 2)		LAT °N. 41°09'19"		COUNTY Clearfield		WEATHERING moderate		JOINTING: (Coal) N80°E, N1°E, N19°W.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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SITE NO. 94-29 (page 2)

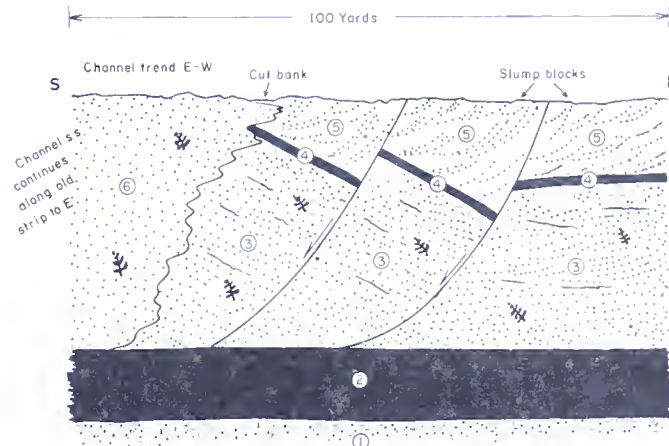
SITE/STATION NO.		94-29 (page 3)		LAT °N.		41°08'19"		COUNTY		Clearfield		WEATHERING		fresh		JOINTING: (Coal) N23°W, N53°E.					
COAL SAMPLE NO.(S)				LONG °W.				78°04'11"				TWP		Karthaus		COMMENTS					
COMPANY				Jas. E. Hoffman Coal Co.				GEOLOGIST		gbg		15' QUADRANGLE		Karthaus							
MINE		Bedford strip		PERMIT		90-2C (2)		DATE		8-9-68		7 1/2' QUADRANGLE		Pottersdale							
COAL(S) REPORTED				Lower Freeport (D) and Upper Freeport (E).																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
							% ABUN - DANCE									THICK - NESS					
							> 60	30 - 60	15 - 30	0 - 15											> 1/4"
T	108'																				
18																		The visible highwall above unit 17 consists of 30' - 40' of Mahoning Ss, cross-bedded, with Cs and shaly lenses.			
17		Coal																Approximate horizon of Upper Freeport (E) coal, now backfilled.			
16	9' 6"	Uc	5' +			N7												Plastic; solid, frag's. + 1/2"; hackly; N3 at top.			
		Cl sh	1' 6"		G	N7 - 5GY 8/1												Fissile; beds 1/8" - 1/4"; platy; siderite nodules to 8			
		Cl sh	3' 0"		G	N7 - 5GY 8/1												Fissile; beds 1/8" - 1/4"; platy; sandy at bottom gradi upward to silt.			
15	6' 3"	Ss	1' 3"		G	N7 - 5YG 6/1												Solid; blocky (one bed); very fine-grained, good sorting, subangular, clay matrix.			
		Sts	5' 0"		G	5YR 6/4 - 5Y 5/6												Frag's. 1/2"+; hackly, rubbly; siderite nodules with lenses to 2" thick x 5' long, c; rootlets, c; irregular bedded and shaly in places; extremely weathered.			
14	5' 3"	Ss	4' 6"		G	N7 - 5YR 6/1												Beds 4" - 2"; slabby, blocky; siderite lenses to 2" thick, r; very fine-grained, fair sorting, subangular, clay matrix, massive and irregular bedded; shale zones to 1", r.			
		lss sh	0' 9"		G	N4 - N5												Fissile; beds 1/4" - 1/2"; platy; siderite nodules, lense to 2", c; leaves, c; sand laminae up to 1/2".			
13	7' 0"	Ss			G	5YR 6/1												Beds 8" - 2', solid; blocky (massive); mica 2, c; ver fine- to fine-grained, fair sorting, subangular, clay matrix.			
12	3' 0"	lsc sh			S	N4 - N6												Lower portion of unit 12 is platy; siderite lenses to 1/4", r. Upper portion is inaccessible.			
11	9' 4"	Sh			S	N1												Fissile; beds 1/32" - 1/8"; platy; blocky; siderite lenses to 1", r; carbonaceous, tough; bone-like. Inaccessible for the most part.			

SITE NO. 95-1

SITE/STATION NO. 95-3		LAT °N. 40°57'47"		COUNTY Clearfield		WEATHERING slight		JOINTING S55°E, N60°E, S20°E.														
COAL SAMPLE NO.(S)		LONG °W. 78°08'24"		TWP. Cooper		COMMENTS Drift being opened into highwall. Deep mine																
COMPANY Pike Coal Co.		GEOLOGIST wee		15' QUADRANGLE Philipsburg		operated by: Riverhill Coal Co., Kylertown, Pa.																
MINE Pike # 4		PERMIT 430-2		DATE 6-12-67																		
COAL(S) REPORTED Clarion.		7 1/2' QUADRANGLE Philipsburg																				
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S				C O M M E N T S								
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)			BRITISH THERMAL UNITS						
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)							
							% ABUN- DANCE	THICK- NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
T	24'																					
3	19' 0"	Cl sh	10' 0"			N4										Silty; fissile; beds 1/8" - 1/2"; chippy.						
		St sh	5' 0"		G	N4										Fissile; beds 1/8" - 1/4"; chippy; large flat siderite nodules, r.						
		Cl sh	4' 0"		G	N4										Fissile; beds 1/8" - 1/4"; chippy; 1/2" siderite nodules						
2	5' 5"	Coal	1' 2"	51-65	G	N1		+		+	+					Bony; cubic fracture; thick Sh partings, c.						
		Coal	0' 7"	44-51	S	N1		+			+	+				Fine partings, c.						
		Coal	2' 0"	20-44	S	N1			+			+				Thin Sh partings, c; 0" - 2" thick layer of pyrite nodules at top.						
		Coal	1' 8"	0-20	S	N1			+				+			Rough fracture; 0" - 2" thick layer of pyrite nodule at top.						
																Unit 2: Clarion coal. Coal contains unusual cleavage plane which strikes N18°E, dips SE52°. Related to local faulting stress?						
1		Uc			S																	

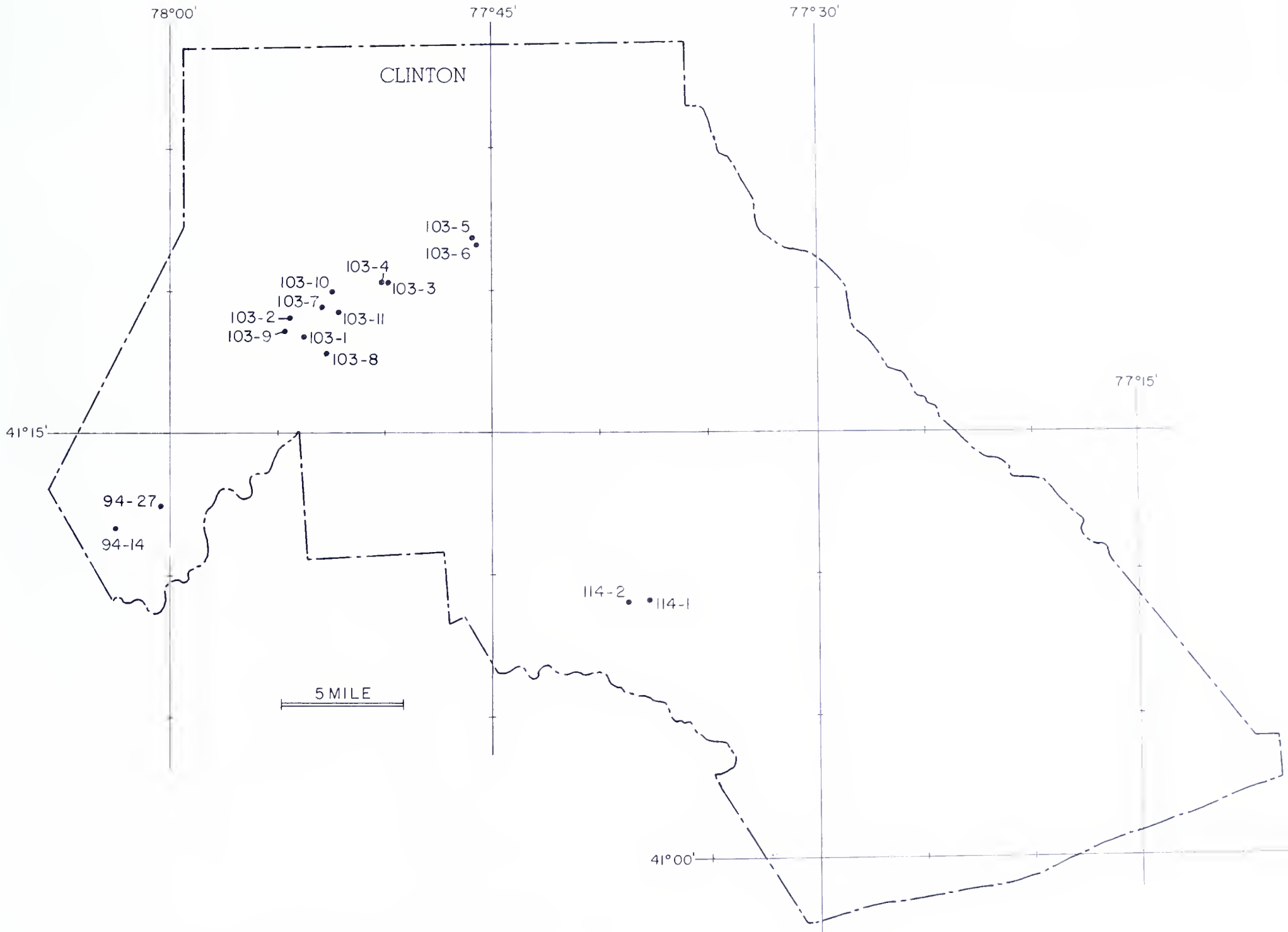
SE/STATION NO.	95-4	LAT °N.	40°59'40"	COUNTY	Clearfield	WEATHERING	extreme	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	78°11'30"	TWP.	Graham	COMMENTS			
COMPANY	McGovern Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Philipsburg				
McGovern #	1	PERMIT	440-1	DATE	7-12-67	7 1/2' QUADRANGLE	Philipsburg		
COAL(S) REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S						
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L								P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						A N T H R A X Y L O N				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
						% ABUN - DANCE															
						T H I C K - N E S S															
						> 60	30 - 60	15 - 30	0 - 15						> 1/4"	1/8" - 1/4"	1/32" - 1/8"				
47' - 50'																					
20'+	Ss				N5 - N6													Fissile; beds 2" - 8"; flaggy, slabby; channel axis, E-W; mica l, c; plt. frgs., c; fine-grained, sub-rounded, clay matrix; coal fragments.			
6'+	Ss			U	N6													Fissile; beds 1" - 2"; slabby; cross-bedding dips S; fine-to medium-grained, good sorting, clay matrix, dark minerals.			
1' - 4'	Ss			S														Fine-to medium-grained.			
	Coal St sh			L L	N1 N2													Shaly. Fissile; beds 1/32" - 1/8"; chippy; plt. frgs., a; carbonaceous, a. Unit 4: St sh, Coal and Ss, interbedded.			
14'±	Ss			S	N4 - N6													Fissile; beds 1/4"-3"; hackly, rubbly; mica l - 2, r - a; plt. frgs., leaves, c - a; very fine- to fine-grained, good sorting, clay matrix, dark minerals; coal stringers to 1" thick. Probably deltaic.			
6' 5"	Coal	1' 6"	59-77	S	N1		+			+	D-MB							Cubic fracture.			
	Coal	3'±	23-59	S	N1		+			+	B							Splintery fracture; fairly persistent partings, r; pyrite nodules; 0" - 1" parting at top.			
	Cs	1'±		S	N3													Parting.			
	Coal	0' 11"	0-11	S	N1		+			+	MB							Cubic fracture. Two to three partings to 1", locally. Unit 2: Lower Kittanning (B) coal, (possibly composed of either B ₁ - B ₄ , or B ₂ - B ₄).			
	Ss			S														Silty.			



SITE/STATION NO.	95-6	LAT °N.	40°58'01"	COUNTY	Clearfield	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO(S)	95-C-5	LONG °W.	78°10'58"	TWP.	Morris	COMMENTS	Units 1 - 2, both mined.		
COMPANY	Pike Coal Co.	GEOLOGIST	gbg	15' QUADRANGLE	Philipsburg				
MINE	PERMIT 430-4	DATE	8-23-68	7 1/2' QUADRANGLE	Philipsburg	The information below supplied by mine foreman.			
COAL(S) REPORTED	Middle Kittanning (C) or "split C"; Upper Kittanning (C').					* Pa. Geol. Survey coal designation.			

S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
																			Coal analyzed M/7-25-69		
7		Coal																	Mined. Upper Kittanning (C') coal.		
6	Interval?																		Undifferentiated.		
5	"thin"	Coal																	Middle Kittanning (CR) rider coal.*		
4	30' 0"																		Undifferentiated.		
3	1' 10"	Coal		0-22							0.8	22.4	64.9	11.8	2.26		13478		95-C-5, Middle Kittanning (C ₂) coal.*		
2	30' 0"																		Undifferentiated.		
1		Coal																	Predominantly nonbanded. Middle Kittanning (C ₁) coal.*		



SITE/STATION NO.		94-14		LAT °N.		41°11'35"		COUNTY		Clinton		WEATHERING		moderate		JOINTING													
COAL SAMPLE NO.(S)				LONG °W.		78°02'26"		TWP.		W. Keating		COMMENTS																	
COMPANY		Garden Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Karthaus																			
MINE		New Garden Strip		PERMIT		381-2		DATE		6-16-66		7 1/2' QUADRANGLE		Pottersdale															
COAL(S) REPORTED		Lower Kittanning (B).																											
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS								
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH					
							% ABUN- DANCE				THICK- NESS																		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"															
T	11'																												
5		cover																Spoils.											
4	2' 6"	Coal		0-30		N1												Weathered. Lower Kittanning (B).											
3	5' 0"	Uc			S	N5												Solid; <u>Stigmara</u> .											
2	2' 1"	Coal		0-25	S	N1												Banded; weathered. Lower Kittanning (B).											
1	1'+	Uc			S	5YR 4/1																							

SITE NO. 94-27 (page 1)

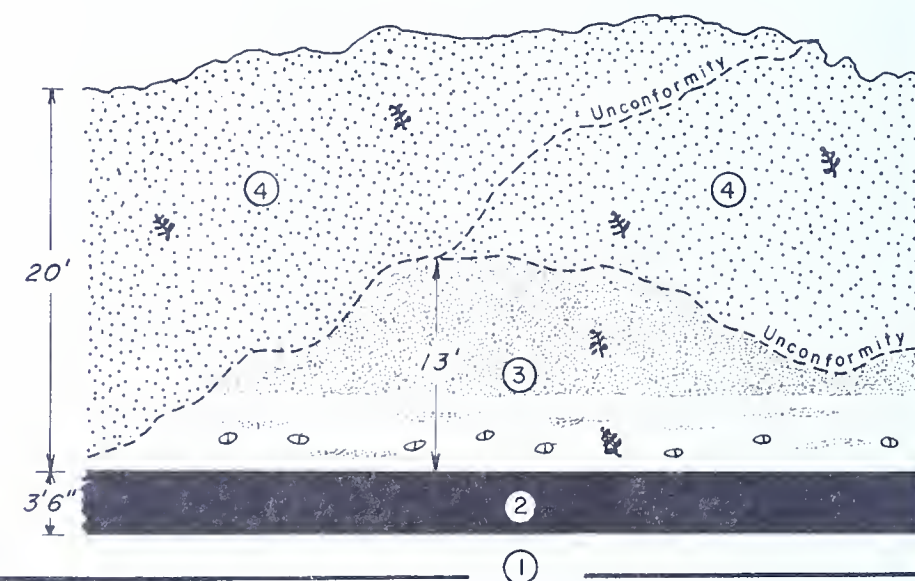
SITE/STATION NO.		94-27 (page 2)		LAT °N.		41°12'19"		COUNTY		Clinton		WEATHERING		fresh		JOINTING : (Coal) N84°E, N40°W.					
COAL SAMPLE NO.(S)		94-C-20		LONG °W.		78°00'17"		TWP.		West Keating		COMMENTS		: (Sandstone) N35°W.							
COMPANY				Garden Coal Co., Inc.				GEOLOGIST		gbg		15' QUADRANGLE		Karthaus		Mined for Garden Coal Co., Inc., by Mr. Jones and Mr. Turner.					
MINE #3		PERMIT 381-3		DATE		8-9-68		7 1/2' QUADRANGLE		Pottersdale											
COAL(S) REPORTED				Middle Kittanning (C).																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON														
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"		1/32" - 1/8"	< 1/32"	MOISTURE	VOLATILE				
T	55'																				
6	5'+	Ss				N7													Beds 1" - 4"; flaggy; vague cross-bedding; mica 3, c; plt. frgs., c; very fine- to fine-grained, fair sorting, subangular, clay matrix; clay chips, c; partially covered.		
5	3' 9"	St sh			?	N1													Soft; clayey; subfissile; beds -1/32" to 1/4"; papery, chippy; leaves, a; carbonaceous.		
4	1' 0"	Ss			G	N3 - N4													Silty; frag's. +1/2"; hackly; plt. frgs., c; very fine-grained, fair sorting, subangular, clay matrix.		
3	1' 6"	Sts			G	N5 - N7													Frag's. +1/2"; hackly.		
		Ss	26' 0"		G	N5 - N7													Beds 6" - 2'; flaggy, slabby, blocky; vague cross-bedding; mica 1, c; branches, c; very fine- to fine-grained, fair sorting, subangular, clay matrix, dark minerals, r; clay chips, c.		
		Cl sh, Ss, Coal	0' - 2' 8"		G	N1 - N3													Interbedded lenses of coal, Cl sh and Ss (fine-grained fair sorting, subangular, clay matrix); subfissile; frag's. +1/2"; chippy, rubbly; irregular bedded with a wavy bottom.		
		Ss	6' 0"		S	N5													Beds 1/2" - 6"; flaggy; cross-bedding N70°-90°W, 22° dip mica 1, c; very fine- to fine-grained, fair sorting, subangular, clay matrix.		
		Ss	1' 3"		G	N3 - N5													Beds 1/2" - 2"; platy; fine-grained, fair sorting, subangular, clay matrix; interbeds of silt shale to 1/2" thick for 30% - 50% of interval; fissile to thin-bedded.		
2	39' - 42'	Ss	6' 6"		G	N7 - 5GY 8/1													Beds 1/2" - 4'; flaggy, slabby; vague cross-bedding; mica 1, c; branches, c; very fine- to fine-grained, fair sorting, subangular, clay matrix; coal laminae to 1/32" thick, r; massive.		

SITE/STATION NO.		103-1		LAT °N.		41°18'25"		COUNTY		Clinton		WEATHERING		fresh		JOINTING		N32°W											
AL SAMPLE NO.(S)		103-C-1		LONG °W.		77°53'48"		TWP.		Noyes		COMMENTS		Originally D. G. Wertz Coal Co.															
COMPANY		River Hill Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Renovo West																			
PERMIT		89-5		DATE		5-24-66		7 1/2' QUADRANGLE		Keating																			
LOCAL(S) REPORTED		Lower Kittanning (B) and Lower Kittanning (B) rider ? coal.																											
S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES							C O M M E N T S			
GROSS UNIT		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE , IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL		PROXIMATE (%)		SULFUR (%)		AIR DRYING LOSS (%)		BRITISH THERMAL UNITS									
INTERVAL (TOTAL)												ANTHRAXYLON																	
												% ABUN - DANCE		THICK - NESS															
												> 60		> 1/4"															
												30 - 60		1/8" - 1/4"															
												15 - 30		1/32" - 1/8"															
												0 - 15		< 1/32"															

SITE/STATION NO.	103-2	LAT °N.	41°19'05"	COUNTY	Clinton	WEATHERING	fresh	JOINTING	N70°E, N35°W.
COAL SAMPLE NO.(S)	103-C-3	LONG °W.	77°54'27"	TWP	Noyes	COMMENTS			
COMPANY	Kettle Creek Corp.	GEOLOGIST	wee	15' QUADRANGLE	Renovo West				
MINE #	3	PERMIT	447-3	DATE	6-13-67	7 1/2' QUADRANGLE	Keating		
COAL(S) REPORTED	Middle Kittanning (C).								

S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES					C O M M E N T S
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN - DANCE			THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
T	25'																	Coal analyzed M/7-7-69					
4	0' to 20'+	Ss				N7												Fissile; beds 1" - 8"; slabby; mica 1 - 2, a; plt. frgs., c; silty and very fine-to fine-grained, fair sorting, subrounded, clay matrix, dark minerals.					
3	13' 0"	Sts	8' 0"		U	N5												Fissile; beds 1" - 6"; slabby; plt. frgs., c.					
		Cs	5' 0"		G	N5												Silty; fissile; beds 1"-6"; slabby; siderite nodules to 1" in the lower 4'; plt. frgs., c.					
2	3' 6"	Coal		0-42	S	N1	+				+	+	MB MD	0.6	26.4	64.6	8.4	3.96	13357	Cubic to splintery fracture; thin partings, r. <u>103-C-3</u> , Middle Kittanning (C) coal.			
1		Uc			S	5Y 4/1														Hackly; plt. frgs., <u>Stigmaria</u> , a.			

S50E ← 150 Yards → N50



[illegible]

TE/STATION NO.	103-5	LAT °N.	41°21'44"	COUNTY	Clinton	WEATHERING	slight	JOINTING: (Coal)	N85°E, N5°E.
COAL SAMPLE NO.(S)	103-C-5	LONG °W.	77°45'49"	TWP.	Chapman	COMMENTS	Jointing: (Nonbanded coal)	N75°E, N10°W, N30°W,	
COMPANY	R.S. Carlin, Inc.	GEOLOGIST	gbg	15' QUADRANGLE	Renovo West			: (Shale)	N37°W.
NE Ridge strip	PERMIT 134-16	DATE	8-6-68	7 1/2' QUADRANGLE	Renovo West				
COAL(S) REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)						ANTHRAXYLON			ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
						% ABUN- DANCE	THICK- NESS													
							> 60	30 - 60							15 - 30	0 - 15				
53'																	Coal analyzed M/7-25-69			
22' 0"	cover																Sts weathering to soil.			
2' 0"	Sts			G	N3												Beds 1/4" - 4"; slabby, blocky; sand laminae, r.			
7' 6"	Cs	0' 6"		G	N3												Solid; hackly; slickensides.			
	Cs	3' 6"		G	N4 - N5												Frag's. -1/2"; hackly; siderite bands to 8" thick x 15' long; slickensides.			
	Cs	3' 6"		G	N4 - N5												Beds 1/4" - 1/2"; rubbly; rough; siderite nodules to 1"; Stigmara, c; smooth fracture; silt increases upward.			
1' 6"	Cl sh			G	N3												Subfissile; beds 1/2" - 6"; blocky, rubbly; siderite nodules 1" - 3", bands 2" x 3' long.			
0" - 6"	Siderite			S													Solid; discontinuous, 4' - 6' long. Siderite lense.			
4' 6"	Cl sh			S	N3												Beds 1/2" - 3"; slabby, blocky; marine fossils, a.			
1' 11"	Coal		0-23	S	N1			+				D					Nonbanded; solid.			
1' 4"	Cs			S	N3 - N6												Subfissile; beds 1/4" - 6"; blocky.			
2' 3"	Coal	0' 6 1/2"	20 1/2-27	S	N1			+	+			D					Bone; subfissile; beds 1/8"-1/2"; platy; dirty; coal laminae 1/4"-1/2".			
	Coal	1' 8 1/2"	0-20 1/2	G	N1	+			+			B					Pyrite lenses to 1/2", c.			
			0-27											1.0 19.9 49.8 29.3 1.50	10356	103-C-5, Lower Kittanning (B) coal.				
10' - 15'	Uc			S													Plastic. Operator indicated this clay to have been sold to a clay company.			
																</				

SITE/STATION NO.	103-6	LAT °N.	41°21'32"	COUNTY	Clinton	WEATHERING	moderate	JOINTING: (shale)	N80°E, N7°W.
COAL SAMPLE NO.(S)	103-C-6	LONG °W.	77°45'33"	TWP.	Chapman	COMMENTS	Foreman states this stripping was opened for an l		
COMPANY	R.S. Carlin, Inc.	GEOLOGIST	gbg	15' QUADRANGLE	Renovo West	beneath this coal (unit 1) but there is a hard			
MINE	PERMIT 134-16 (G)	DATE	8-6-68	7 1/2' QUADRANGLE	Renovo West	beneath the coal which overlies the Uc. Uc			
COAL(S) REPORTED	Unknown					removal is uneconomical.			

S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES					C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS						
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH												
							% ABUN- DANCE	THICK- NESS																	
							> 60 30 - 60 15 - 30 0 - 15	> 1/4" 1/8" - 1/4" 1/32" - 1/8" < 1/32"																	
T	44'																	Coal analyzed M/7-25-69							
5	20'+	Ss				N7 - 5YR 8/1												Fluvial; flaggy; cross-bedding N40°W, 28° dip; fine-grained 30' above coal.							
4	20' 0"				S													Undifferentiated.							
3	10'+	Sh																Extremely weathered.							
2	0' 6"	Cl sh			G	N1 - N3												Beds 1/8" - 1/4"; platy; <u>Lingula</u> sp. (crinkled), c.							
1	1' 1"	Coal		0-13	S	N1	+	+		MB	0.6	24.6	63.9	10.9	3.40		13405	"Dirty," not mined; pyrite lenses, c. <u>103-C-6</u> , coal							

STATION NO.	103-7	LAT °N.	41°19'24"	COUNTY	Clinton	WEATHERING	fresh	JOINTING: (coal)	N35°W, N80°E, N25°W.
SAMPLE NO.(S)	103-C-7	LONG °W.	77°52'59"	TWP.	Noyes	COMMENTS	Jointing: (clay shale)	N70°E, N28°W.	
COMPANY	Kettle Creek Corp.	GEOLOGIST	gbg	15' QUADRANGLE	Renovo West				
PERMIT	No. 6	PERMIT	447-6	DATE	8-7-68	7 1/2' QUADRANGLE	Keating		
REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S						
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
INTERVAL (TOTAL)						A N T H R A X Y L O N						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
						% ABUN - DANCE				THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
47' - 57'																		Coal analyzed M/7-25-69			
0' - 50'	Sts				N5 - N6													Frag's. 1/2"+; hackly, rubbly; leaves, a; coal bands to 2", c; Sts channel-fill with jumbled bedding, locally replaces Units 2 and 3a, thereby contacting Unit 1.			
0' - 40'	Ss			U	N7 - 5B 7/1													Massive Ss similar to Site 103-11 (mine permit 467-6).			
0' - 4'	Cl sh	0' - 4'		U	N4													Beds 1/4" - 3"; blocky; tough.			
6' 8"	Coal	0' 4"	76-80	S	N1		+			+	+	MD						Not mined.			
	Cs	0' 5"		S	N1 - N3													Solid; hackly; coal laminae to 1/32".			
	Coal	5' 11"	0-71	S	N1		+			+			2.2	21.0	65.3	11.5	2.22	12534 Pyrite lenses 1/2" thick x 2" long, c; Cs lenses to 2", c - r; clay on joint surfaces; extremely weathered. 103-C-7, Lower Kittanning (B) coal.			

SITE/STATION NO.		103-8 (page 1)		LAT °N.		41°17'43"		COUNTY		Clinton		WEATHERING		fresh		JOINTING : (Shale) N32°W.					
COAL SAMPLE NO.(S)		103-C-8		LONG °W.		77°52'33"		TWP.		Noyes		COMMENTS									
COMPANY		Kettle Creek Coal Co.		GEOLOGIST		gbq		15' QUADRANGLE		Renovo West		reached but Ss rises, gradually revealing 15'+ shale									
MINE		PERMIT 447-7		DATE		8-8-68		7 1/2' QUADRANGLE		Keating		over Unit 9.									
COAL(S) REPORTED				Lower Kittanning (B).																	
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH								
							% ABUN - DANCE	THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							

SE/STATION NO.		103-8 (page 2)		LAT °N.		41°17'43"		COUNTY		Clinton		WEATHERING		fresh		JOINTING: (shale) N32°W.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COAL SAMPLE NO.(S)		103-C-8		LONG °W.		77°52'33"		TWP.		Noyes		COMMENTS		Parts of highwall to right of station can't be reached but Ss rises gradually revealing 15' shale over Unit 9.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COMPANY		Kettle Creek Coal Co.		GEOLOGIST		gbg		15' QUADRANGLE		Renovo West																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
PERMIT		447-7		DATE		8-8-68		7 1/2' QUADRANGLE		Keating																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
COAL(S) REPORTED		Lower Kittanning (B).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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SITE NO. 103-9

SE/STATION NO.	103-10	LAT °N.	41°19'57"	COUNTY	Clinton	WEATHERING	fresh	JOINTING	
CAL SAMPLE NO.(S)	103-C-10	LONG °W.	77°52'26"	TWP.	Leidy	COMMENTS			
COMPANY	Richmont Coal Co.	GEOLOGIST	gbg	15' QUADRANGLE	Renovo West				
ME Westport #5	PERMIT 467-5	DATE	8-6-68	7 1/2' QUADRANGLE	Renovo West				
CAL(S) REPORTED	Lower Kittanning (B).								

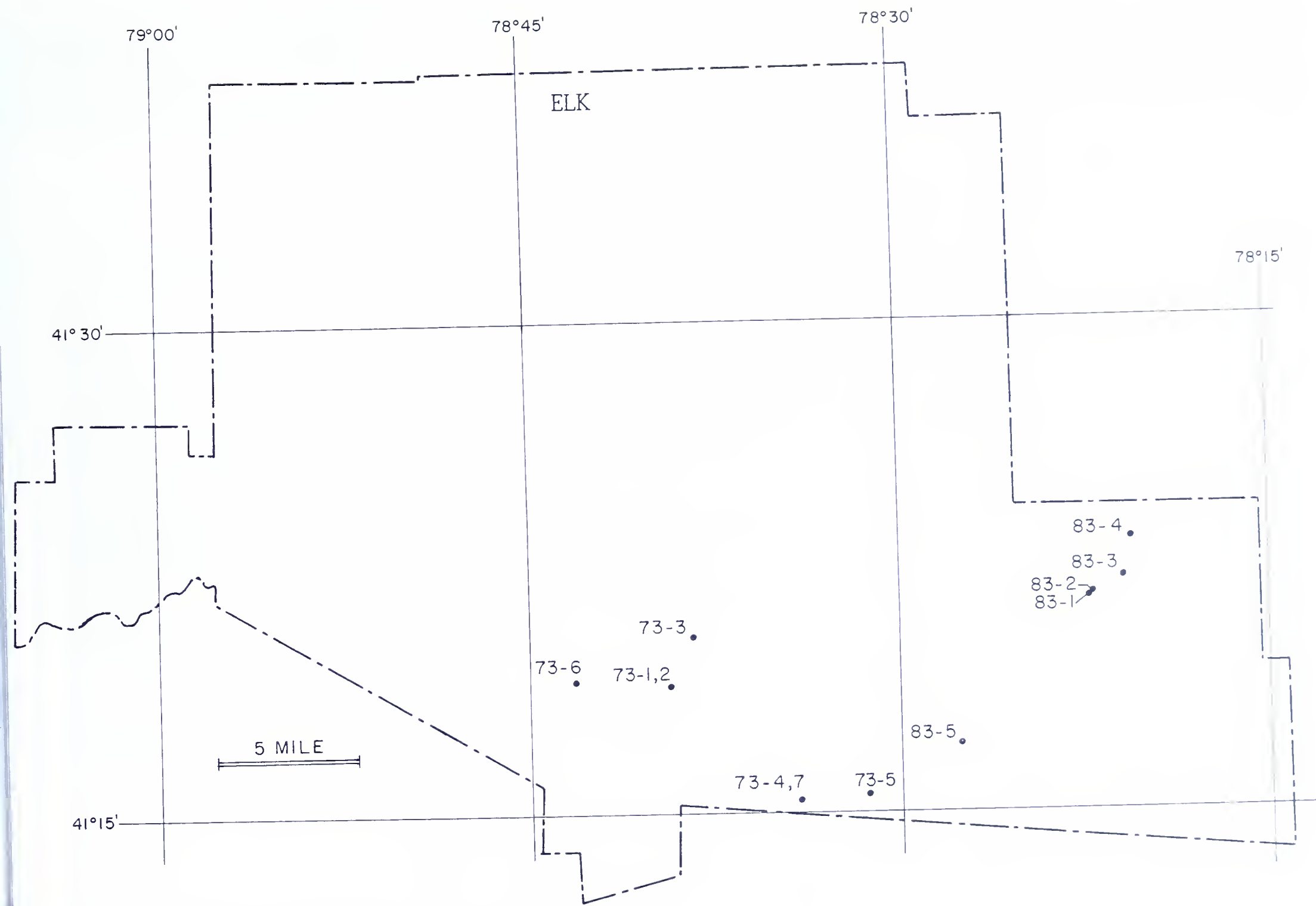
S T R A T I G R A P H I C D A T A		C O A L C H E M I C A L A N A L Y S E S										C O M M E N T S											
NUMBER	GROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)				BRITISH THERMAL UNITS					
							A N T H R A X Y L O N							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)	
							% A B U N - D A N C E				T H I C K - N E S S												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8"- 1/4"	1/32"- 1/8"										< 1/32"
	80' - 83'																					Coal analyzed M/7-25-69	
		Ss	40'+			N7																	Beds 3' - 2'; flaggy, slabby; vague cross-bedding; fine-grained, clay matrix; top flaggy in 1' - 2' beds.
2	65' 0"	Ss	25' 0"		G	N7																	Beds 2' - 4'; slabby, blocky; shale and siderite nodules 1/4" - 1", c - r; fine-grained, fine sorting, subangular to subrounded, clay matrix; Fe-stain, a.
3	3' - 6'	Ss			U	N7																	Frag's. +1/2"; rubbly; siderite nodules to 2"; fine-grained, poor sorting, rounded; shale and siltstone pebble conglomerate with fragments to 1' 3"; contorted and jumbled bedding.
2	4' 6" - 7' 6"	Ss			S	N6 - 5GY 6/1																	Beds 2' - 4'; mica 2, c; fine-grained, subangular to subrounded, clay matrix, dark minerals, r; coaly fragments, c.
1	4' 6"	Coal	2' 8"	22-54	U	N1	+		+			MB	1.0	23.4	68.2	7.4	2.63		14107				Cs lenses to 1", c; extremely weathered; soil on surfaces.
		Uc	1" - 2"		S	5YR 4/1																	103-C-10, Lower Kittanning (B) coal.
		Coal	1' 8"	0-20	S	N1			+			B											Plastic; solid; hackly. Mined; not sampled.

SITE/STATION NO.		103-11		LAT °N.		41°19'15"		COUNTY		Clinton		WEATHERING		fresh		JOINTING: (Coal) N82°-90°E, N8°-11°W.													
COAL SAMPLE NO.(S)		103-C-11		LONG °W.		77°52'02"		TWP.		Noyes		COMMENTS Jointing: (Claystone) N25°W, (Sandstone) N35°W.																	
COMPANY				Richmont Coal Co.				GEOLOGIST		gbg		15' QUADRANGLE		Renovo West		Operator reports average ash content of seam is 13%													
MINE		PERMIT		467-6		DATE		8-7-68		7 1/2' QUADRANGLE		Renovo West																	
COAL(S) REPORTED				Lower Kittanning (B).																									
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS										
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH														
							% ABUN- DANCE	THICK- NESS																					
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"															
T	66' - 68'																												Coal analyzed M/7-25-69
7	20'+	Sts				5Y 6/1 - N4																							Sandy; beds 1/2" - 6"; rubbly; siderite bands 4" thick x 6' long, c; leaves, trunks, a, fairly well preserved fronds. Unit becomes platy to slabby upward.
6	2' 0"	covered																											Covered interval.
5	5' 0"	Ss				N7 - 5B 7/1																							Beds 8" - 3'; slabby, blocky; siderite and limonite nodules to 1/2", r; mica 2, a; branches, c; very fine to fine-grained; coal laminae to 1/64", r.
4	2' 0"	Sts			U	N4																							Beds 1/2" - 1'; slabby, rubbly; branches, a.
		Ss	25' 0"		S	N7 - 5B 7/1																							Beds 1" - 4'; blocky; large-scale cross-bedding, N40 12° dip; siderite nodules to 2", r; mica 2, a; branches, c; fine-grained, clay matrix; coal laminae to 1/64", r; Fe-stain.
3	28' - 30'	Cgl	3' - 5'		G																								Solid; rubbly; siderite, shale, siltstone and coal pebbles 1"; matrix: N7, fine-grained, poor sorting subangular to rounded.
2	4' 6"	Cs			U	N3 - N4																							Subfissile; beds 1/2" - 3"; slabby, rubbly; siderite lenses 1/2" thick x 3" long, c; pyrite "specks", c; slickensides.
		Coal	0' 4"	66-70	S	N1			+		+	+	MD																Dirty, not mined or sampled; Sh laminae and lenses to 1/4", c.
		Uc	0' 5"		S	N1																							Parting; frag's. - 1/2".
1	5' 10"	Coal	5' 1"	0-61	S	N1		+			+		MB	0.8	21.6	64.9	12.7	3.18											Dirty; pyrite lenses 1/8" - 1" thick x 6" long; Cs lenses 1/4" - 1/2"; 2" of nonbanded coal at 2' 3" from bottom. 103-C-11, Lower Kittanning (B) coal.

SITE/STATION NO. 114-1		LAT °N. 41°09'11"		COUNTY Clinton		WEATHERING fresh		JOINTING N34°W																
CAL SAMPLE NO(S) 114-C-1		LONG °W. 77°37'34"		TWP. Bald Eagle		COMMENTS																		
COMPANY Rougeux and Trimpey		GEOLOGIST adg		15' QUADRANGLE Howard																				
MIE Tango-Scootac		PERMIT 86-2		DATE 6-1-66		7 1/2' QUADRANGLE -																		
CAL(S) REPORTED		Lower Kittanning (B) and Lower Kittanning (B) rider ? coal.																						
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S									
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)						ANTHRAXYLON						% ABUN - DANCE	THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"			1/32" - 1/8"	< 1/32"									
34'																								
	cover																							Soil.
	Coal																							Blossom. Lower Kittanning (B) rider ? coal.
7' 0"	Sts				N5 - N6																			Grades upward to Uc; beds 1/4" - 1/2".
8' 0"	lss st			G	N6																			Beds 1/4" - 1/2"; mica, r; silt to very fine-grained; silica cement, c.
15' 0"	St sh			G	N5																			Beds 1/4" - 1/2"; hackly; grades upward to Cl sh.
3' 10"	Coal	0' 6"	40-46	S	N1										0.8	17.3	61.7	20.2	3.12		11660		Bony.	
	Sh	0' 4"																						Parting.
	Coal	0' 3"	33-26		N1								MB	0.7	17.2	69.9	12.2	2.82			13110		Thin Sh partings.	
	Bone	0' 2"																						Tough.
	Coal	2' 7"	0-31		N1								B	0.6	19.6	74.7	5.1	2.02			14340		Splintery fracture; banded.	
														0.6	19.1	72.4	7.8	2.24			13855		Seam average of 114-C-1, Lower Kittanning (B) coal.	

SITE/STATION NO. 114-2	LAT °N. 41°09'08"	COUNTY Clinton	WEATHERING slight	JOINTING N35°W, N55°E.
COAL SAMPLE NO.(S)	LONG °W. 77°38'39"	TWP. Bald Eagle	COMMENTS	
COMPANY Rougeux and Trimpey	GEOLOGIST wee	15' QUADRANGLE Howard		
MINE	PERMIT 86-1A	DATE 6-15-67	7 1/2' QUADRANGLE Howard NW	
COAL(S) REPORTED	Clarion.			

S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES					C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE		THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
T	36'																			
7	1'+	Coal				N1												Blossom, extremely weathered.		
6	3' 0"	Cl sh				N5												Fissile; beds 1/32" - 1/8"; chippy.		
5	12' 0"	St sh - Sts			G	N5												Fissile; beds 1/2" - 3"; chippy, slabby; mica 1 - 2, r c; plt. frgs., leaves, <u>Stigmara</u> , a.		
4	0' 5"	Coal		0-5	S	N1												Shaly; very "dirty"; fusain, a.		
3	16' 0"	Ss - St sh			S	N5												Fissile, subfissile; beds 1/2" - 3"; chippy, slabby; mica 1 - 2, c; plt. frgs., leaves, <u>Stigmara</u> , a; b of lss st, r.		
2	4' 3"	Bone	0' 2"																	
		Coal	1' 1"	36-49		N1												Bony.		
		Bone	0' 3"			N1														
		Coal	1' 1"	20-33		N1														
		Bone	0' 3"																	
		Coal	0' 8"	9-17		N1														
		Cs	0' 1"															Parting.		
	Coal	0' 8"	0-8		N1												Unit 2: Slightly weathered and wet; slightly dull to bony. Clarion coal.			
1		Uc			S															



SITE/STATION NO.		73-1		LAT °N.		41°18'57"		COUNTY		Elk		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)		73-C-1, -2		LONG °W.		78°39'12"		TWP		Fox		COMMENTS				Operator note: Coke Button Test of "9'" for Lower Kittanning (B) Site No. 73-1 and "6'" for Middle Kittanning (C) Site No. 73-2					
COMPANY		R. C. Johnson		GEOLOGIST		tmb		15' QUADRANGLE		Ridgway											
MINE		Johnson		PERMIT		368-2		DATE		8-24-66		7 1/2' QUADRANGLE		-							
COAL(S) REPORTED Middle Kittanning (C) rider, or Upper Kittanning (C'), and Middle Kittanning (C).																					
S T R A T I G R A P H I C														D A T A		COAL CHEMICAL ANALYSES				C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN- DANCE		THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	39'																				
8		cover																			
7	12' 0"	Cl sh			C	N2 - N3											Fissile; beds -1/32" - 1/4"; chippy; inaccessible; coarser upward.				
6	0' 10"	Coal	0' 3"	7-10		N1							1.6	18.3	27.9	52.2	0.87	5940	Bony?; rough fracture; pyrite lenses to 1 1/2" at top; weathered.		
		Coal	0' 3"	4-7		N1		+	+			+	MD	2.6	25.3	46.6	25.5	0.68	9640		
		Coal	0' 4"	0-4	S	N1	+	+				+	MB	2.3	29.2	57.4	11.1	0.95	12340		
														2.2	24.8	45.3	27.8	0.84	9610	Seam average of 73-C-2, Middle Kittanning (C) rider Upper Kittanning (C') coal. Unit 6: Not mined.	
5	3' 0"	Uc			S	5Y 6/2													Fissile at bottom, solid towards top; rubbly; plt. frgs., r.		
4	1' 0"	Ss			S	5B 6/1													Beds 3" - 1'; very fine-grained, clay matrix; rock fragments; clay galls, r.		
3	17' 0"	Cl sh			S	N6													Fissile; beds 1/4" - 1/2"; platy, hackly; mica; plt. frg silty upward.		
2	2' 2 1/2"	Coal	1' 2"	12 1/2-26 1/2		N1	+					+	+	B- MB	1.3	28.2	65.0	5.5	1.50	13800	Discontinuous fusain partings to 1/2", r.
		Cl sh	1/4" - 1/2"																	Parting; dense, bony, very hard.	
		Coal	1' 0"	0-12	S	N1	+					+	+	MB	1.2	26.7	62.1	10.0	1.65	13090	
															1.3	27.5	63.7	7.6	1.57	13472	Seam average of 73-C-1, Middle Kittanning (C) coal.
1	3' 5"	Uc			S	N3 - N4														Solid; rootlets, a.	

STATION NO. 73-2		LAT °N. 41°18'57"		COUNTY Elk		WEATHERING		JOINTING														
CL SAMPLE NO.(S) 73-C-6		LONG °W. 78°39'12"		TWP Fox		COMMENTS																
COMPANY R. C. Johnson		GEOLOGIST tmb		15' QUADRANGLE Ridgway																		
Johnson PERMIT 368-2		DATE 8-24-66		7 1/2' QUADRANGLE -																		
CL(S) REPORTED Lower Kittanning (B).																						
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE				THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
INTERVAL (TOTAL)																						
56'																						
3' 5"	Uc				N3 - N4														Solid; rootlets, a. (Middle Kittanning underclay).			
11' 0"	Cs			G	N5, 5Y 6/1														Solid; hackly, rubbly; rootlets at top, a.			
38' 0"	Cl sh			G	N3 - N4														Fissile; beds 1/32" - 3"; platy, chippy, hackly; siderite nodules scattered throughout; mica near top; becomes coarser upward. Weathers papery. <u>Lingula</u> sp. at bottom; then dense zone of siderite concretions; then chonetids, <u>Linoproductus</u> sp., ammonoids, nautiloids, and gastropods; then a thin zone clayey St sh near top.			
2' 1 1/2"	Coal	1' 2"	11 1/2-25 1/2		N1	+				+	+	MD	1.0	34.3	58.8	5.9	2.38	14100				
	Bone	0' 1/2"																	Parting.			
	Coal	0' 11"	0-11	S	N1	+				+	+	MD	1.2 1.1	32.5 33.5	59.7 59.2	6.6 6.2	2.61 2.48	13740 13942	3/4" - 1" pyrite parting at bottom. Seam average of 73-C-6, Lower Kittanning (B) coal.			
1'+	Uc			S	5Y 5/1														Solid; rubbly; <u>Stigmara</u> and rootlets; slickensides.			

SITE/STATION NO.		73-3 (page 1)		LAT °N.		41°20'20"		COUNTY		Elk		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
COAL SAMPLE NO(S)		73-C-3, -5		LONG °W.		78°38'19"		TWP.		Fox		COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
COMPANY		Smith and Rogos Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Ridgway																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
MINE Smith & Rogos #1		PERMIT 135-2 (A3)		DATE		8-24-66		7 1/2' QUADRANGLE		-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
COAL(S) REPORTED		Lower Freeport (D)? and Upper Freeport (E).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

STATION NO. 73-3 (page 2)		LAT °N. 41°20'20"		COUNTY Elk		WEATHERING		JOINTING													
CL SAMPLE NO.(S) 73-C-3, -5		LONG °W. 78°38'19"		TWP. Fox		COMMENTS															
COMPANY Smith and Rogos Coal Co.		GEOLOGIST tmb		15' QUADRANGLE Ridgway																	
Smith & Rogos #1 PERMIT 135-2 (A3)		DATE 8-24-66		7 1/2' QUADRANGLE																	
CL(S) REPORTED Lower Freeport (D)? and Upper Freeport (E).																					
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S						
GROSS UNIT	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L								P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						A N T H R A X Y L O N				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
						% ABUN-DANCE		THICK-NESS													
						> 60	30 - 60	15 - 30	0 - 15							> 1/4"	1/8" - 1/4"				
INTERVAL (TOTAL)																					
36'																					
8'+	Ss				N8														Beds 3" - 4'; weathered color: 5YR 7/2; fine-to medium-grained, clay matrix, dark minerals; clay galls, c. Thinner-bedded near top with a few "patches" of Cl sh and clay chips (5Y 7/2).		
3' 0"	Ss			G	N6 - N7														Beds 1/2" - 3"; mica, c; medium-grained, clay matrix, dark minerals; carbonaceous material. Laterally unit is similar to Unit 7.		
8' 6"	Cl sh			G	N4														Silty (coarser upward); fissile; beds 1/2" - 1/2"; platy, hackly; <u>Neuropteris</u> sp.		
5' 5"	Coal	0' 6"	59-65		N1		+	+			VD	2.1	24.5	44.5	28.9	1.28	9510	Bony; clay partings, a. Not mined.			
	Cl sh	0' 6"																	Parting; discarded.		
	Coal	0' 8"	45-53		N1		+	+			MD -D	1.8	28.2	49.1	20.9	1.74	11200	Knife-edge pyrite partings, r.			
	Cl sh	0' 1/2"																	Parting.		
	Coal	1' 0"	32 1/2-44 1/2		N1	+				+	+	MD	1.4	30.5	65.8	2.3	2.15	13880	Peacock lustre; fusain bands, r.		
	Fusain	0' 1"																	Parting.		
	Coal	1' 4"	15 1/2-31 1/2		N1	+				+	+	MB	1.8	28.8	64.0	5.4	0.84	13670	Thin fusain partings, r.		
	Fusain	0' 1/2"																	Parting.		
Coal	1' 3"	0-15	S	N1	+				+	+	+	MD	2.5 1.9	28.3 28.5	57.0 58.4	12.2 11.2	0.79 1.28	12710 12677	Fusain partings at bottom, c. Unit 4: Weathered. Seam average of 73-C-5, Upper Freeport (E) coal.		
10' - 15'	Uc			S	N4, 5Y 4/2														Solid; rubbly; rootlets, a; "greenish" and silty near bottom. Apparently grades laterally into a Cl sh and Sts (N7, silty, fissile, platy, with unconformable upper contact). At NW end of stripping there is 30' - 35' of Cl and Cl sh between the coals. The Ss (Unit 7) cuts into the top of the coal.		

SITE/STATION NO.		73-4 (page 1)		LAT °N.		41°15'28"		COUNTY		Elk		WEATHERING		fresh		JOINTING				
COAL SAMPLE NO.(S)		73-C-4, -7		LONG °W.		78°34'03"		TWP.		Fox		COMMENTS		Unit 3 bears abundant marine fossils; samples in Pa. Geol. Survey collections.						
COMPANY		New Shawmut Mining Co.		GEOLOGIST		tmb		15' QUADRANGLE		Rldgway										
MINE		Tamburlin strip		PERMIT		196-6		DATE		8-18-66		7 1/2' QUADRANGLE		-						
COAL(S) REPORTED		Middle Kittanning (C) and Lower Kittanning (B).																		
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN- DANCE		THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
		Coal	0' 3"	27-30		N1			+		+	VD	2.2	22.4	52.0	23.4	1.16		11010	Canneloid?
		Coal	0' 9"	18-27		N1			+		+	D	1.3	33.4	61.1	4.2	1.03		14280	1/4" pyrite parting at bottom.
		Cl sh	0' 1 1/2"																	Parting.
		Coal	0' 3"	14 1/2 - 17 1/2		N1		+			+	MB	1.3	33.4	61.3	4.0	0.79		13610	
2	2' 6"	Fusain	0' 1 1/2"																	Parting.
		Coal	1' 2"	0-14	S	N1	+				+	MB	1.3 1.4	30.2 30.7	61.7 60.5	6.8 7.4	1.63 1.31		13780 13631	Knife-edge pyrite partings and blebs, r. Seam average of 73-C-4, Lower Kittanning (B) coal.
1	Few "+	Uc			S	N4														Solid; semi-plastic; rootlets.

E/STATION NO. 73-4 (page 2)		LAT °N. 41°15'28"		COUNTY Elk		WEATHERING fresh		JOINTING											
L SAMPLE NO(S) 73-C-4, -7		LONG °W. 78°34'03"		TWP. Fox		COMMENTS Unit 3 bears abundant marine fossils; samples in Pa. Geol. Survey collections.													
COMPANY New Shawmut Mining Co.		GEOLOGIST tmb		15' QUADRANGLE Ridgway															
E Tamburlin strip		PERMIT 196-6		DATE 8-18-66		7 1/2' QUADRANGLE -													
L(S) REPORTED Middle Kittanning (C) and Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S				
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L				P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
						A N T H R A X Y L O N				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
						% ABUN - DANCE		THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15										> 1/4"
62'																			
	cover																		
	Ss				N4 - N5													Fissile; beds 1/4" - 3"; fine-grained.	
	Sts				N6													Fissile, beds 1/32" - 1/2"; platy, chippy; mica, r; carbonaceous.	
14' 0"	Cl sh			C	N7													Fissile; beds -1/32" - 1/4"; chippy; mica. Unit 12: Interlaminated, but grades upward as shown.	
0' 6"	Cl sh			G	N3													Fissile; mica; carbonaceous.	
	Coal	0' 10 1/2"	11-21 1/2		N1	+				+	+	B	2.1	27.3	65.2	5.4	0.69	13710	Fusain partings, r.
	Fusain	1/8" - 1/4"																	Parting.
1' 9 1/2"	Coal	0' 11"	0-11	S	N1	+				+		MB	2.0	28.4	64.0	5.6	1.03	13190	
													2.0	27.9	64.6	5.5	0.86	13444	Seam average of 73-C-7, Middle Kittanning (C) coal.
0' 2"	Cl sh			S	N2														Fissile; rootlets; carbonaceous.
0' 2"	Coal			S	N1														
2' 0"	Uc			S	N5 - N6														Solid; semi-plastic; rootlets.
2' - 3'	Cs			G	5Y 7/6, 10YR 7/6														Solid; rubbly.
4' 0"	Cl sh			G	N4 - N5														Fissile; beds 1/4" - 1/2"; solid; platy, hackly; mica, r; Fe-stain, a.
10' 0"	St sh			G	N5														Fissile; beds 1/32" - 3"; platy, chippy, hackly, rubbly; scattered siderite nodules; mica; grades to Cl sh, N6, upward.
25' 0"	Cl sh			G	N3 - N4														Fissile; beds 1/32" - 1/2"; platy, chippy, hackly; siderite nodules scattered throughout (to 3" at bottom, and 5" upward). Abundant marine fossils - many varieties.

SITE/STATION NO.		73-5		LAT °N.		41°15'36"		COUNTY		Elk		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)		73-C-8		LONG °W.		78°31'15"		TWP.		Jay		COMMENTS									
COMPANY		New Shawmut Mining Co.		GEOLOGIST		adg		15' QUADRANGLE		Ridgway											
MINE		Cherry Run		PERMIT		196-7		DATE		8-18-66		7 1/2' QUADRANGLE		-							
COAL(S) REPORTED		Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE		THICK - NESS												
							> 60	< 1/4"	> 1/8"	< 1/32"											
		30 - 60	1/8" - 1/4"	15 - 30	1/32" - 1/8"	0 - 15															
T	39'																				
3		cover																Soil.			
2	35' 0"	Cs																Beds 1/2" - 3"; hackly; siderite nodules.			
1	3' 4"	Coal	0' 8"	32-40	S							1.4	21.6	46.5	30.5	0.81	9780	Bony.			
		Coal	1' 1 1/2"	18 1/2-32		NI	+	+		+	+	MD	2.1	26.7	67.6	3.6	0.75	13890			
		Bone	0' 1"																		
		Coal	1' 5 1/2"	0-17 1/2		NI	+		+		MD	1.0 1.5	26.3 25.5	64.9 62.1	7.8 11.0	2.19 1.41	13570 12903	Pyrite. Seam average of 73-C-8, Lower Kittanning (B) coal.			

SITE/STATION NO.		73-6 (page 1)		LAT °N.		41°19'10"		COUNTY		Elk		WEATHERING		JOINTING									
COAL SAMPLE NO.(S)				LONG °W.		78°43'03"		TWP.		Horton		COMMENTS											
COMPANY		Smith & Rogos Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Ridgway													
LINE		Smith & Rogos #2		PERMIT		135-1&1 (A)		DATE		8-18-66		7 1/2' QUADRANGLE		-									
COAL(S) REPORTED		Lower Freeport (D).																					
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE				THICK- NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
		Coal	0' 9"	35-44		N1	+					+		B					Pyrite-fusain partings, c. Parting, discontinuous.				
		Fusain	0" - 1"																				
		Coal	0' 10"	25-35		N1	+	+				+	+	MB MD					Fusain-pyrite partings, r.				
		Pyrite	0" - 1"																Parting, discontinuous.				
2	3' 8"	Coal	2' 1"	0-25	S	N1	+					+	+	MB MD					Knife-edge fusain partings, r. Unit 2: Lower Freeport (D) coal.				
1		Cl sh			S	N4													Silty; fissile; beds 1/32" - 1/4"; chippy; mica.				

SITE/STATION NO.		73-6 (page 2)		LAT °N.		41°19'10"		COUNTY		Elk		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)				LONG °W.		78°43'03"		TWP.		Horton		COMMENTS									
COMPANY Smith & Rogos Coal Co.				GEOLOGIST tmb		15' QUADRANGLE		Ridgway													
MINE Smith & Rogos #2 PERMIT 135-1&J (A)				DATE 8-18-66		7 1/2' QUADRANGLE		-													
COAL(S) REPORTED				Lower Freeport (D).																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE														
							> 60	30 - 60*	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	54'																				
15		cover																			
14	12' 0"	Ss & Sts			S	N5, 5B 6/1												Beds 1/4" - 3"; platy, flaggy; mica, c; silt to very fine-grained; limonite-stain. Interbedded.			
13	0' 1/2"	Cl sh			S	N1												Coaly.			
12	4' 0"	Uc			S	5Y 4/1												Solid; blocky; semi-flint?; limonite stain, a.			
11	3' 0"	Cs			G	N6, 5Y 6/1, 5R 4/2												Solid; rubbly; mottled color; semi-plastic; slicken-sides.			
10	5' 6"	Sts			G	5G 7/1												Slightly clayey; solid; sandy laminae, r.			
9	8' 0"	Cl sh			G	N4												Fissile; beds 1/4" - 1'; solid; platy; top partially covered.			
8	1' 6" - 2' 0"	Ls			S	N5												Micritic; continuous bed, but has nodular aspect.			
7	5' 0"	Ls				N6												Micritic; nodules 3" - 1' diameter.			
		Cl sh				N5 - N4											Fissile; beds 1/4" - 1/2"; solid; platy.				
		Cs			S	N6, 5Y 7/1											Solid; slickensides, a. Unit 7: Interbedded.				
6	0" - 4"	Cl sh			S	N2												Fissile; beds 1/32" - 1/4"; chippy, hackly; coaly blebs carbonaceous.			
5	2' 7"	Cl sh			S	N5												Carbonaceous material.			
4	2" - 6"	Cl sh			S	N3												Fissile; beds 1/32"-1/4"; chippy; carbonaceous material, c; extremely friable.			
3	8' 0"	Cl sh			S	N5												Fissile; beds 1/4" - 1/2", solid; platy; <u>Calamites</u> sp., r			

SITE/STATION NO.		73-7		LAT °N.		41°15'28"		COUNTY		Elk		WEATHERING		moderate		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
COAL SAMPLE NO.(S)				LONG °W.				78°34'03"				TWP				Fox				COMMENTS				Units 3 - 9 inaccessible. Middle Kittanning (C)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
COMPANY				New Shawmut Mng. Co.				GEOLOGIST				adg				15' QUADRANGLE				Ridgway				coal evidently backfilled here. 50' interval bet-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
MINE				Mill Run Strip				PERMIT				DATE				8-23-66				7 1/2' QUADRANGLE				-				between Middle Kittanning (C) and Upper Kittanning																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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SITE/STATION NO.		83-1		LAT °N.		41°21'28"		COUNTY		Elk		WEATHERING		moderate		JOINTING					
COAL SAMPLE NO.(S)				LONG °W.				78°22'16"				TWP.		Benezette				COMMENTS			
COMPANY				P. & N. Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Benezette							
MINE CBS Strip		PERMIT 32-3 & 3A		DATE		6-30-66		7 1/2' QUADRANGLE		-											
COAL(S) REPORTED				Clarion.																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	34'																				
2	30' 0"	Cs/St sh				N5												Beds 1/2" - 3"; chippy; siderite nodules, r.			
1	3' 6"	Coal	0' 6"	36-42	S													Bony; shaly.			
		Coal	0' 8"	28-36		N1												Banded.			
		Sh	0' 1/2"															Parting.			
		Coal	1' 5"	10 1/2-27 1/2		N1												Banded.			
		Bone	0' 1"																		
		Coal	0' 9 1/2"	0-9 1/2		N1												Unit 1: Clarion coal.			

TE/STATION NO.		83-2		LAT °N.		41°21'35"		COUNTY		Elk		WEATHERING		moderate		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COAL SAMPLE NO.(S)				LONG °W.				78°22'03"				TWP.				Benezette																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
COMPANY				P. & N. Coal Co.				GEOLOGIST				adg				15' QUADRANGLE				Benezette																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
LINE				C.B.S. strip				PERMIT				32-3 & 3A				DATE				6-30-66				7 1/2' QUADRANGLE				-																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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GROSS UNIT		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE, IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL						PROXIMATE (%)						SULFUR (%)						AIR DRYING LOSS (%)						BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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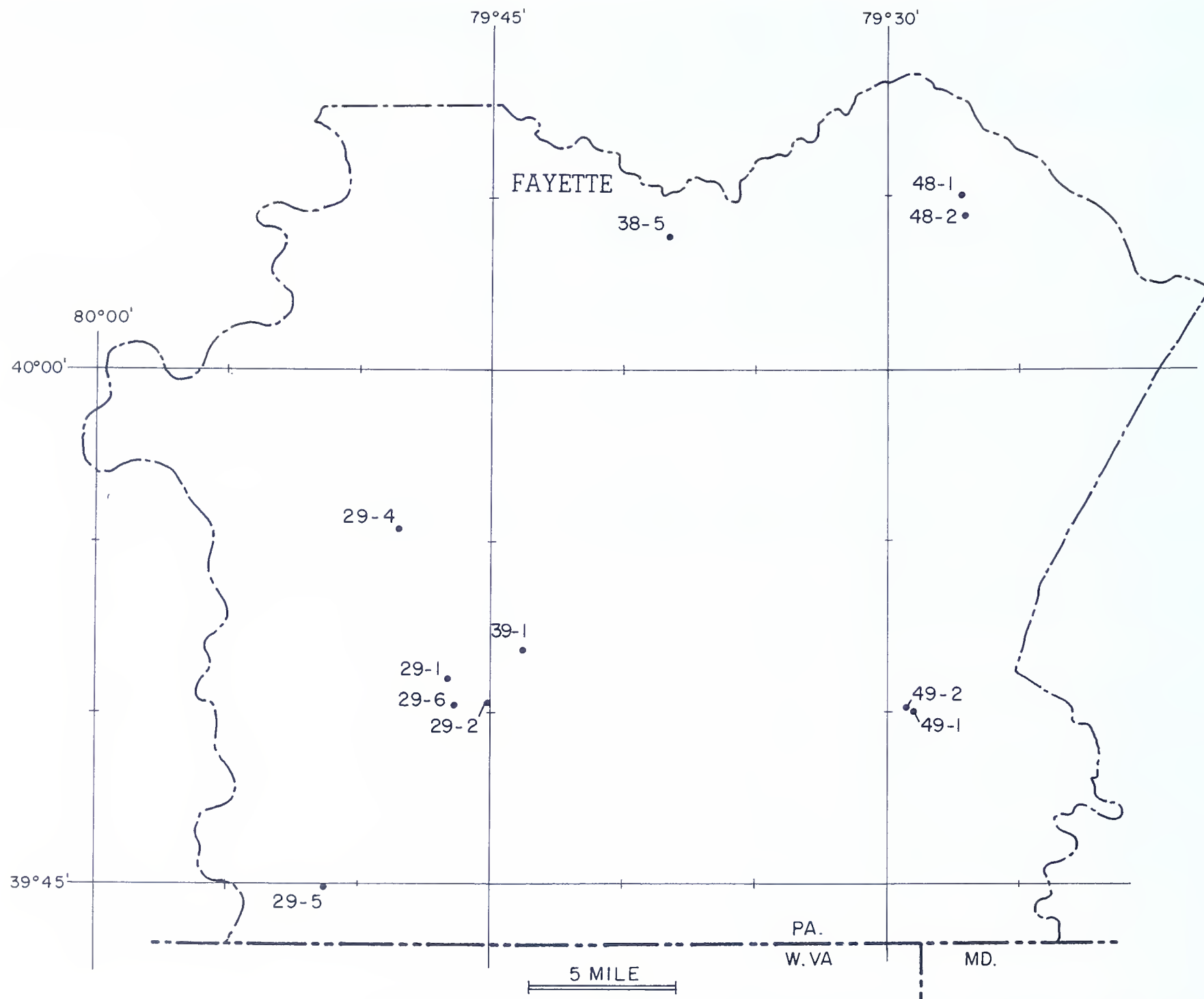
SITE/STATION NO.		83-3		LAT °N.		41°22'05"		COUNTY		Elk		WEATHERING		JOINTING											
COAL SAMPLE NO(S)				LONG °W.				78°20'54"				TWP.		Benezette		COMMENTS									
COMPANY				P. & N. Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Benezette											
MINE		PERMIT		32-20		DATE		6-30-66		7 1/2' QUADRANGLE		-													
COAL(S) REPORTED				Lower Kittanning (B).																					
S T R A T I G R A P H I C D A T A																COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS						
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH				
							% ABUN- DANCE			THICK- NESS															
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"											
T	30'																								
3	25' 0"	Cs				N5																Beds 1/2" - 3"; hackly; siderite nodules, r; <u>Lingula</u> sp. 3' from bottom.			
2	0' 6"	Sh			S	N1																Plt. frgs.; pyrite.			
1		Coal	0' 5 1/2"	46 1/2-52	S	N1																			
		Sh	0' 6 1/2"																			Parting; plt. frgs.			
		Coal	1' 1"	27-40		N1									D							Banded.			
																						Knife-edge parting.			
		Coal	0' 9 1/2"	17 1/2-27		N1																Slightly bony.			
		Sh	0' 1 1/2"																			Parting.			
		Coal	1' 5"	0-17	S	N1									D							Banded. Unit 1: Lower Kittanning (B) coal.			

E/STATION NO.		83-4 (page 1)		LAT °N.		41°23'15"		COUNTY		Elk		WEATHERING		extreme		JOINTING		S84°E-S59°W; N50°E-N55°W.									
AL SAMPLE NO.(S)				LONG °W.		78°20'32"		TWP.		Benezette		COMMENTS															
MPANY		P. & N. Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Benezette																	
IE Booth # 2		PERMIT 32-20		DATE 6-28-67		7 1/2' QUADRANGLE																					
AL(S) REPORTED		Lower Kittanning (B).																									
S T R A T I G R A P H I C D A T A																											
ROSS UNIT										COAL CHEMICAL ANALYSES								C O M M E N T S									
INTERVAL (TOTAL)		LITHOLOGY		INTERVAL (SUB-UNIT)		COAL BENCHES CUMULATIVE, IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL				ATTRITUS LUSTER		PROXIMATE (%)				SULFUR (%)		AIR DRYING LOSS (%)		BRITISH THERMAL UNITS	
												ANTHRAXYLON															
												% ABUN- DANCE		THICK- NESS													

SITE/STATION NO.		83-4 (page 2)		LAT °N.		41°23'15"		COUNTY		Elk		WEATHERING		extreme		JOINTING		S84°E -S59°W; N50°E-N55°W.																													
COAL SAMPLE NO.(S)				LONG °W.				78°20'32"				TWP.				Benezette				COMMENTS																											
COMPANY				P. & N. Coal Co.				GEOLOGIST				wee				15' QUADRANGLE				Benezette																											
MINE		Booth # 2		PERMIT		32-20		DATE		6-28-67		7 1/2' QUADRANGLE																																			
COAL(S) REPORTED				Lower Kittanning (B).																																											
S T R A T I G R A P H I C																		D A T A										COAL CHEMICAL ANALYSES										C O M M E N T S									
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																											
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON																																								
							% ABUN - DANCE			THICK - NESS																																					
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"		1/32" - 1/8"	< 1/32"	MOISTURE	VOLATILE					FIXED CARBON	ASH																								
T	29'																																														
10	3'+	lss sh				N5													Clayey; fissile; beds 1/8"-1/4"; chippy; plt. frgs.,																												
9	5' 0"	Ss	2' 0"		S	N7													Subfissile; beds 1"-6"; blocky, rubbly; mica l, c; plt. frgs., rootlets a; very fine-to fine-grained, good sorting, subangular, silica cement.																												
		Ss	3' 0"		G	N6												Fissile; beds 1" - 6"; slabby; mica l - 2, c; plt. frgs., a; very fine to fine-grained, poor sorting, clay matrix, dark minerals.																													
8	0' 1"	Ss			S														Fissile; beds -1/32"; chippy; plt. frgs., a; silt to very fine-grained, poor sorting, clay matrix; carbonaceous, a. Hiatus, weathered zone.																												
7	8' 0"	lss st			S	N5 - N6													Clayey; fissile; beds 1/2" - 1"; slabby; plt. frgs., c. Predominantly silt at bottom, grading to mostly sar at top.																												
6	0' 2"	Ss			S														Fissile; beds -1/32"; chippy; plt. frgs., a; silt to very fine-grained, poor sorting, matrix; carbonaceous, a. Hiatus, weathered zone.																												
5	4' 0"	Ss	2' 0"		S	N6													Subfissile; beds 1/2"-1"; slabby, hackly; mica l, a; plt. frgs., a; silt to very fine-grained, clay matr																												
		lss st	2' 0"		G	N4													Subfissile; beds 1/2" - 1"; slabby, hackly; plt. frgs., a.																												
4	0' 2"	Ss			G														Fissile; beds -1/32"; chippy; plt. frgs., a; silt to very fine-grained, poor sorting, clay matrix; carbonaceous, a; Hiatus, weathered zone.																												

STATION NO.	83-5	LAT °N.	41°17'04"	COUNTY	Elk	WEATHERING	extreme	JOINTING:	(coal) N75°W, N10°E.
CL SAMPLE NO.(S)	83-C-1	LONG °W.	78°27'30"	TWP	Jay	COMMENTS	Only lower part of highwall described. Unit 2: Augered with 29 inch diameter holes an average of 150 feet into hillside.		
PANY	Bennett Coal Co.	GEOLOGIST	gbg	15' QUADRANGLE	Benezette				
Bennett (?)	PERMIT 3067 BSM27	DATE	8-22-68	7 1/2' QUADRANGLE	-				
CL(S) REPORTED	Lower Kittanning (B)?								

CROSS UNIT		S T R A T I G R A P H I C D A T A					C O A L C H E M I C A L A N A L Y S E S							C O M M E N T S							
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)				BRITISH THERMAL UNITS				
						A N T H R A X Y L O N							ATTRITUS	LUSTER	MOISTURE	VOLATILE		FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)
						% ABUN - DANCE	THICK - NESS														
> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"														
21' +																		Coals analyzed M/7-25-69			
	Ss																	Inaccessible.			
16' 9"	St sh	16' 0"		S	N3 - N4													Clayey; subfissile, beds 1/4" - 1"; blocky; small siderite nodules, a, to 6", r.			
	Cl sh	0' 9"		G	N4 - N5													Soft; beds 1/4" - 1/2"; subfissile; platy, rubbly; siderite nodules to 1", a; leaves, c; Fe-stain, a; weathered.			
3' 1"	Coal	0' 7"	30-37	S						+	+	+	+	D	1.8	20.6	34.9	42.7	0.41	7839	Bone; lower 4" is a Cl sh, N1, fissile.
	Coal	2' 6"	0-30	G		+							+	MB	1.7	29.7	63.1	5.4	0.84	13865	Mined portion of seam. Augered.
															1.7	28.0	57.8	12.5	0.76	12725	Seam average of 83-C-1, Lower Kittanning (B) ? Coal.
1' 0" +	Uc				N7 - 10YR 5/2																Plastic; solid, frag's. -1/2"; hackly.



STATION NO. 29-1 (page 1)	LAT °N. 39°51'04"	COUNTY Fayette	WEATHERING	JOINTING
SAMPLE NO.(S) 29-C-1	LONG °W. 79°46'36"	TWP. Georges	COMMENTS	
ANY Swaney & Swaney Coal Co.	GEOLOGIST tmb	15' QUADRANGLE Masontown		
Collier #5	PERMIT 302-1	DATE 6-22-66	7 1/2' QUADRANGLE Smithfield	
(S) REPORTED Sewickley coal.				

S T R A T I G R A P H I C D A T A														C O A L C H E M I C A L A N A L Y S E S						C O M M E N T S					
FESS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								ATTRITUS LUSTER	COAL PROXIMATE (%)					SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
						% ABUN - DANCE				ANTHRAXYLON THICK - NESS					MOISTURE	VOLATILE	FIXED CARBON	ASH							
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"												
4' 10 1/2"	Coal	1' 7"	39 1/2-58 1/2		N1	+					+		MD -D	1.0	28.7	61.9	8.4	2.06		13100	Cubic, rough fracture in upper 3"; pyrite partings, r.				
	Pyrite	0' 1 1/2"																			Parting, discontinuous.				
	Coal	0' 11"	28-39		N1	+					+		D	1.1	29.3	64.0	5.6	2.11		14160	Cubic fracture.				
	Pyrite	0' 2"																			Parting, mostly as nodules.				
	Coal	1' 7"	7-26		N1		+	+			+	+	D	0.9	29.9	54.5	14.7	3.71		12550	Cubic fracture; more pyrite partings than in above.				
	Coal	0' 7"	0-7	S	N1	+						+	MB MD	0.9	32.4	55.5	11.2	2.70		13240	Cubic fracture, except upper 2" (rough).				
														1.0	29.7	58.8	10.5	2.74		13118	Seam average of 29-C-1, Sewickley coal.				
0' 3"	Cl sh			S	N3																Beds 1/4" - 1/2"; platy, hackly; plt. frgs., r; pyrite, a.				
0' 2"	Coal			S	N1																A part of Sewickley coal, (Unit 4)?				
Few "+	Cl sh			S	N3																Beds 1/4" - 1/2"; platy, hackly; plt. frgs., r; pyrite, a.				

SITE/STATION NO.		29-1 (page 2)		LAT °N.		39°51'04"		COUNTY		Fayette		WEATHERING		JOINTING								
COAL SAMPLE NO.(S)		29-C-1		LONG °W.		79°46'36"		TWP.		Georges		COMMENTS										
COMPANY Swaney & Swaney Coal Co.				GEOLOGIST tmb		15' QUADRANGLE		Masontown														
MINE Collier # 5		PERMIT 302-1		DATE 6-22-66		7 1/2' QUADRANGLE		Smithfield														
COAL(S) REPORTED				Sewickley coal.																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS					
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)			AIR DRYING LOSS (%)			
							% ABUN - DANCE	THICK - NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
T	31'																					
16	6' ±	St sh			G	N5																Beds 1/4" - 3"; platy, hackly; siderite nodules, r; S beds, r. Inaccessible.
15	2' 0"	Ss			S	N6																Beds 1/2" - 3"; mica; fine- to medium-grained, good sorting, clay matrix; coarser upward.
14	1' 0"	St sh			S	N6																Fissile; platy, chippy; siderite nodules; mica.
13	1' 0"	Ss			G	N7																Beds 1/4" - 1'; platy; mica; medium-grained, excellent sorting, clay matrix. Thin Ss laminae, r.
12	2' 0"	Sts			G	N2 - N3																Fissile; beds 1/32" - 1/2"; platy, chippy; mica.
11	2' 0"	Ss			G	N7																Beds 1/4" - 1'; platy; mica; medium-grained, excellent sorting, clay matrix. Interlaminated with thin S laminae, r.
10	3' 0"	lss st			G																	More Ss laminae than Sts.
9	2' 0"	Ss			G	N7																One bed (1' - 2'); solid; medium-grained, excellent sorting, clay matrix.
8	2' 6"	Ss			S	N5																Fissile; beds 1/2" - 3"; platy; mica; fine-grained, good sorting, clay matrix, carbonaceous material; coal laminae.
7	4' 0"	Ss			G	N5																Beds 1/32" - 1/8", and 3" - 1'; hackly; ripple mark mica; very fine-grained, excellent sorting, clay matrix, carbonaceous material. Point-bar thickening.
6	3' 0"	Sts			G	N3, N4																Platy, chippy, hackly; mica; plt. frgs., r; Ss laminae, r.
5	3' 0"	lss st			G	N2 - N3, N6																Fissile; chippy; mica; more Sts laminae than Ss.

STATION NO. 29-2		LAT °N. 39°50'19"		COUNTY Fayette		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
SAMPLE NO.(S)		LONG °W. 79°45'08"		TWP. Georges		COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
COMPANY Ruane Coal & Coke Co.		GEOLOGIST tmb		15' QUADRANGLE Masontown																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Wynn strip		PERMIT 78-1		DATE 6-22-66		7 1/2' QUADRANGLE Smithfield																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
CL(S) REPORTED Pittsburgh.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
						ANTHRAXYLON								S	M	A	V											I	S	U	L	F	I	R	T	H	E	R	S	E	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S

SITE/STATION NO.		29-4		LAT °N.		39°55'22"		COUNTY		Fayette		WEATHERING		moderate		JOINTING					
COAL SAMPLE NO.(S)		29-C-4		LONG °W.		79°48'33"		TWP.		Menallen		COMMENTS		White gypsum crystals integral within units 1 - 5							
COMPANY		Steve Krulock		GEOLOGIST		rds		15' QUADRANGLE		Masontown		including coals.									
MINE		Krulock		PERMIT		345-1		DATE		6-18-68		7 1/2' QUADRANGLE		New Salem							
COAL(S) REPORTED		Pittsburgh main seam and Pittsburgh roof coal.																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE				THICK- NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	37'																				
7		cover																			
6	25' 0"	lss st			G	N2 - N3													A 2' thick Ss unit at 1' - 2' from bottom.		
5	1' 6"	Sh			G	N2													Carbonaceous; large gypsum crystals on joint faces.		
4	3' 4"	Coal	1' 0"	28-40	S	N1															
		Cl	1' 0"		S	N3													Parting; silty; plt. frgs., c; coal stringers.		
		Coal	0' 6"	10-16	S	N1													Contains bony stringers.		
		Cl	0' 6"		S	5Y 6/1													Parting; clay breccia.		
		Coal	0' 4"	0-4	S	N1													Upper 1" is bony, with white gypsum crystals. Pittsburgh roof coal.		
3	1' 1"	Sh			S														Plt. frgs., c; carbonaceous; 1" - 2" thick coal stringers at 2' from bottom; beds 1/4" - 1/2".		
2	1' 0"	Cl			S	N5													Flint (hard) clay;		
1	5' 0"	Coal	1' 9"	39-60	S	N1		+		+				1.1	32.1	56.3	10.5	0.89	13236	Attritus luster, VB - MD.	
		Coal	1' 0"	27-39		N1	+			+	+		VB - B	0.9	32.1	60.0	7.0	0.66	13744	Fe-stain; impersistent 0" - 1/2" clay-fusain parting top.	
		Coal	2' 3"	0-27		N1	+			+	+			0.8	33.6	60.3	5.4	0.65	14107	Hard; vitreous; discontinuous fusain parting at top 4' to unexposed base of coal, according to operat	
															0.9	32.8	58.8	7.5	0.74	13730	Seam average of 29-C-3, Pittsburgh main seam.

E/STATION NO. 29-5		LAT °N. 39°44'51"		COUNTY Fayette		WEATHERING fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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SITE/STATION NO.		29-6		LAT °N.		39°50'17"		COUNTY		Fayette		WEATHERING		moderate		JOINTING													
COAL SAMPLE NO.(S)		29-C-5		LONG °W.		79°46'18"		TWP.		Georges		COMMENTS						Excavation to base? of coal necessary.											
COMPANY				Wm. L. Hill				GEOLOGIST		rds		15' QUADRANGLE		Mason town															
MINE		Hill Strip		PERMIT		457-1		DATE		7-9-68		7 1/2' QUADRANGLE		Smithfield															
COAL(S) REPORTED				Sewickley.																									
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	Coals analyzed M/7-25-69									
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH													
							% ABUN - DANCE		THICK - NESS																				
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"															
T	20'																												
7		cover																											
6	5' 0"	Ss?																Similar to unit 5. Inaccessible.											
5	0' 4"	Ss			S													Similar to unit 6. Inaccessible.											
4	6' 0"	Slt st			S	N2												Platy, flaggy; mica 2, a; <u>Lingula</u> sp. collected at bottom; beds 1/2" - 3".											
3	2' 10"	Isc sh	0' 6"		S	N4, N5												Blocky; mica 2, c; plt. frgs., c; beds 1/32" - 1/8".											
		Ss	0' 3"		S	N6											Cross-bedding; mica 2 - 3, a; fine-grained; carbonaceous streaks; beds 1/2" - 3".												
		Isc sh	2' 0"		S	N4, N6												Rubbly; mica 2, c; plt. frgs., r; beds 1/32" - 1/8".											
		Isc sh	0' 1"		S	N3, N4												Slabby; mica 2, c; "fan-shaped" crystals on outcrop face; coaly streaks at bottom; beds 1/32" - 1/8".											
2	5' 7"	Coal	1' 5"	50-67	S	N1	+				++	D	0.5	32.1	53.4	14.1	1.85	12800											
		Coal	1' 2"	36-50		N1	+				++	MD	0.7	33.6	59.4	6.3	1.36	13938											
		Coal	2' 2"	10-36		N1		+			++	D	0.5	33.2	56.3	10.0	2.70	13554	Bony?										
		Coal	0' 10"	0-10		N1		+			++	MD	0.6	31.3	51.3	16.9	3.70	12365	Pyrite streaks; some peacock luster.										
													0.6	32.7	55.4	11.3	2.35	13265	Seam average of 29-C-5, Sewickley coal.										
1		Uc			S														Plastic; under water; possibly a weathered Cs.										

E/STATION NO. 38-5		LAT °N. 40°03'47"		COUNTY Fayette		WEATHERING moderate		JOINTING												
L SAMPLE NO(S) 38-C-4, -5		LONG °W. 79°38'17"		TWP. Lower Tyrone		COMMENTS Original owner listed as:														
COMPANY Marcelino Coal Co.		GEOLOGIST rds		15' QUADRANGLE Connellsville		Cool Spring Construction and Asphalt Co.														
E Eberharter		PERMIT 464-3		DATE 6-20-68		7 1/2' QUADRANGLE Dawson														
L(S) REPORTED		Pittsburgh main seam and roof coal.																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S						
COSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON					ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE			THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"						1/8" - 1/4"				
INTERVAL (TOTAL)																				
22'																				
	cover																			
8' 0"	Cs			G	N2														Slabby;plt. frgs., c; carbonaceous; beds 1/2" - 3".	
4' 1"	Coal	0' 10"	39-49	S	N1	+				+	+			1.1	25.4	45.1	28.5	2.02	10308	Bony in upper 1/2". Attritus Luster MD - D.
	Cs	0' 6"		S	N3 - N4															Parting; silty; plt. frgs., c; brecciated, slickensides
	Coal	0' 10"	23-33	S	N1	+				+	+		D	0.8	30.1	55.0	14.1	1.80	12824	
	Cs	0' 2"		S	N1															Parting; plt. frgs., c; carbonaceous; slickensides.
	Coal	0' 6"	15-21	S	N1	+				+			MD	1.1	29.0	54.4	15.6	2.53	12292	
	Cs	0' 2"		S	N2															Parting.
	Coal	1' 1"	0-13	S	N1	+				+			MD	0.9	29.1	53.8	16.2	1.48	12534	Lower 1" is bony.
													1.0	28.4	51.9	18.7	1.86	12000	Seam average of 38-C-5, Pittsburgh roof coal.	
0' 8"	Cs			S	N3															Silty.
8' 10 1/2"	Coal	1' 10"	84 1/2-106 1/2	S	N1		+			+	+		D	1.1	30.6	59.1	9.2	0.94	13550	Bony; pyrite in upper 1".
	Coal	2' 0"	60 1/2-84 1/2		N1		+				+		D	1.2	30.6	57.2	11.0	0.68	13212	
	Sh	0' 1"		S	N1															Parting; conchoidal fracture; carbonaceous.
	Coal	1' 0"	47 1/2-59 1/2	S	N1		+			+	+		D	1.2	31.0	62.9	5.0	0.66	14083	
	Coal	1' 1 1/2"	34-47 1/2		N1		+				+	+	D	1.4	30.1	61.9	6.7	0.63	13700	
	Coal	2' 10"	0-34		N1	+				+	+		D	1.6	29.5	61.6	7.3	0.71	13405	
													1.3	30.2	60.3	8.2	0.74	13506	Seam average of 38-C-4, Pittsburgh main seam coal.	
	Uc			S	N4															Silty; semi-plastic in upper 1/2"; weathered Cs.

SITE/STATION NO.		39-1		LAT °N.		39°51'48"		COUNTY		Fayette		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO(S)		39-C-1		LONG °W.		79°43'38"		TWP.		South Union		COMMENTS									
COMPANY				Bridgeview Coal Co.				GEOLOGIST		rds-wee		15' QUADRANGLE		Uniontown							
MINE		PERMIT		DATE		6-6-68		7 1/2' QUADRANGLE		Brownfield											
COAL(S) REPORTED				Sewickley																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH								
							% ABUN- DANCE	THICK- NESS													
														> 60	30 - 60	15 - 30	0 - 15				
T	38'																				
5		cover																			
4	33'+	Ss				N6 - N7														Bedding 3" - 2'; slabby, blocky; large scale cross-bedding N 45° W; fine-grained; includes a St sh bed to 2' thick.	
3	5' 0"	Coal	2' 6"	30-60	S	N1	+			+	+	+	MD	1.5	30.7	50.3	17.5	2.62		12244	Cubic to splintery; thin partings, r.
		Coal	2' 6"	0-30	S	N1	+			+	+	+	MD	0.9	33.2	53.3	12.6	3.05		13091	Cubic to splintery; partings, r; a persistent parting 1" above bottom.
															1.2	32.0	51.8	15.1	2.84		12668
2	0' 2"	Cl sh			S	N3															Silty; hackly.
1	0' 2''+	Uc			S	N6															Upper 2" a wet, plastic clay; weathered from Cs.

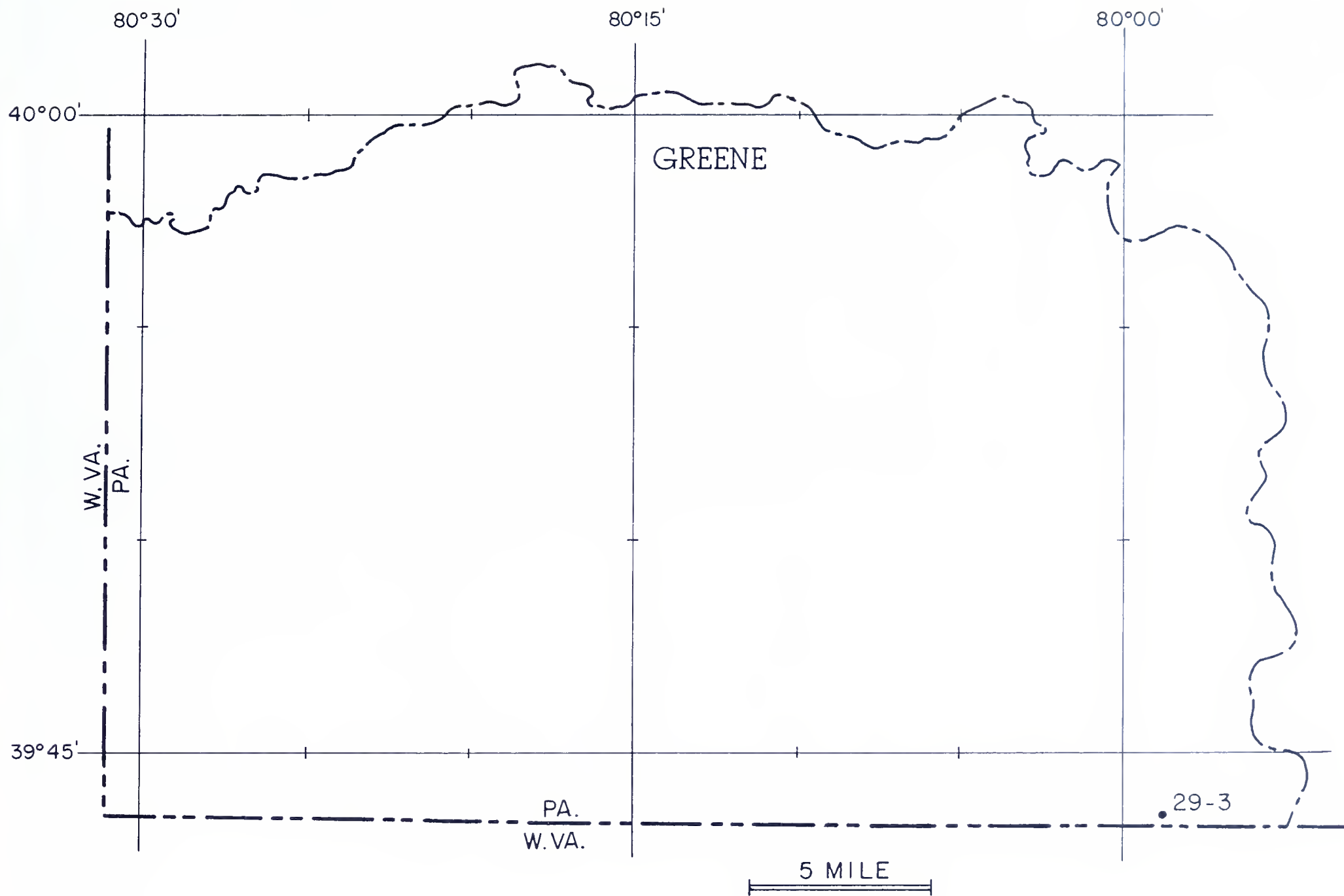
STATION NO.		48-1		LAT °N.		40°05'02"		COUNTY		Fayette		WEATHERING		fresh		JOINTING					
SAMPLE NO.(S)		48-C-1		LONG °W.		79°27'11"		TWP.		Saltlick		COMMENTS									
ANY		Fryske and Nole Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Donegal											
Eutsey strip		PERMIT 242-1(1A)2A		DATE		7-28-66		7 1/2' QUADRANGLE		-											
(S) REPORTED		Mercer?																			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
SS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE			THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"									
15'																					
	cover																	Soil.			
2' 0"+	Cl sh				N5													Beds 1/8" - 1/4"; hackly; 5Y 6/1, upward.			
3' 1/2"	Coal	1' 0"	24 1/2 - 36 1/2	S	N1							1.0	24.5	60.4	14.0	0.53	12850	Bony.			
	Cl sh	0' 1/2"																			
	Coal	2' 0"	0-24		N1	+	+		+		MB MD	1.0	26.4	68.9	3.7	0.61	14440	Thin Sh partings.			
												1.0	25.8	66.1	7.2	0.58	13910	Seam average of 48-C-1, Mercer? coal.			

SITE/STATION NO.	48-2	LAT °N.	40°04'29"	COUNTY	Fayette	WEATHERING	moderate	JOINTING	
COAL SAMPLE NO(S)	48-C-2	LONG °W.	79°27'07"	TWP.	Saltlick	COMMENTS	Coal dips to southeast.		
COMPANY Fryske and Nole Coal Co.		GEOLOGIST	rdg	15' QUADRANGLE		Donegal			
MINE	Benton	PERMIT	242-2	DATE	6-20-68	7 1/2' QUADRANGLE		-	
COAL(S) REPORTED Miller "B"									

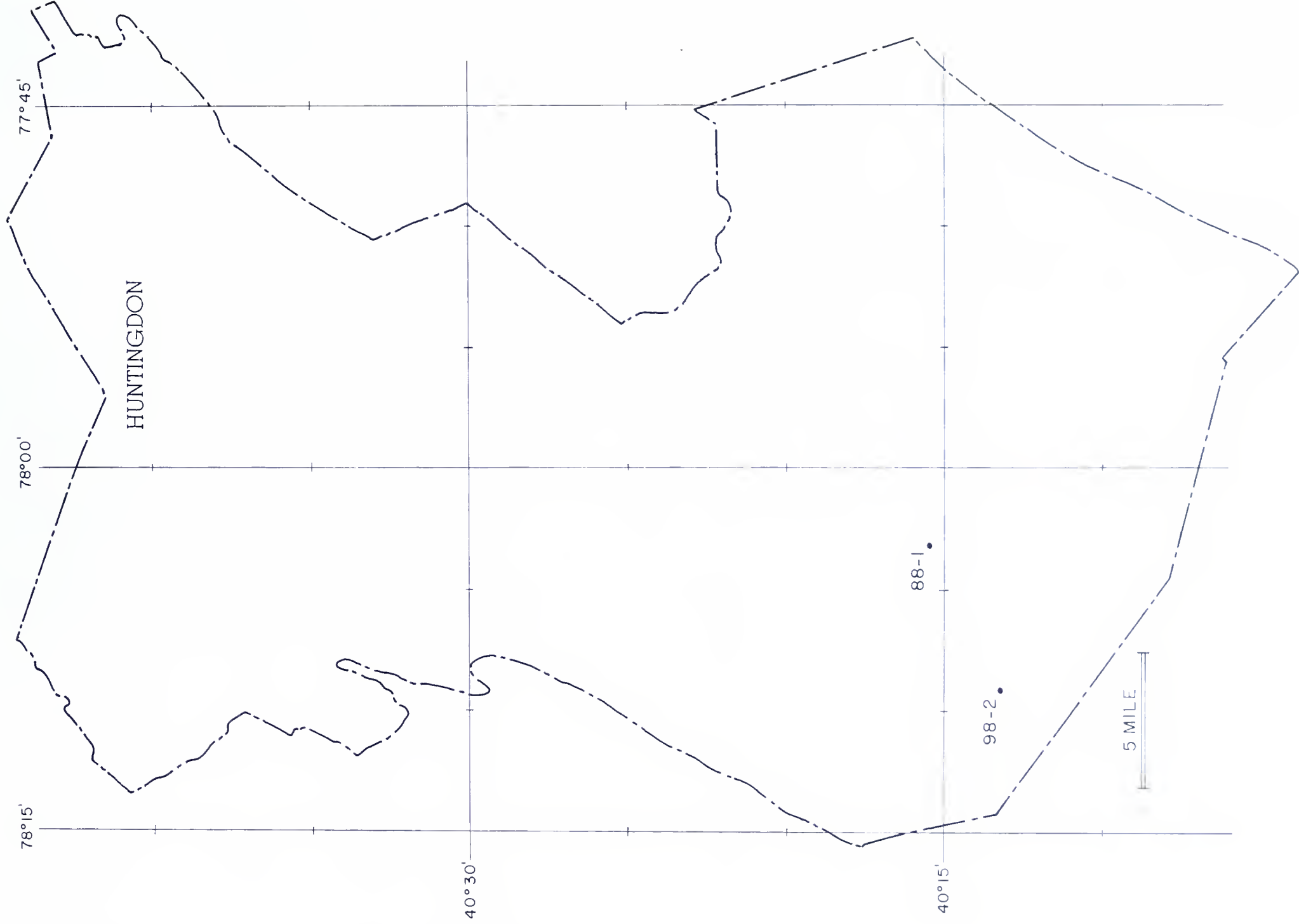
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							COAL CHEMICAL ANALYSES				BRITISH THERMAL UNITS	C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"											1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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STATION NO. 49-1		LAT °N. 39°50'03"		COUNTY Fayette		WEATHERING fresh		JOINTING												
SAMPLE NO.(S) 49-C-3, -4, -5		LONG °W. 79°29'04"		TWP Stewart		COMMENTS Coal (units 2, 4, & 6, Site 49-1) discarded. Clay														
Kaiser Refractories		GEOLOGIST wee/rds		15' QUADRANGLE Confluence		(unit 1, Site 49-1) only used. Generally uniform														
Potato Ridge PERMIT 390-1		DATE 6-6-68		7 1/2' QUADRANGLE Ohio pyle		highwall. See Site 49-2 (mine permit 390-1) for														
(S) REPORTED Lower Kittanning (B)?						units 9 - 16.														
S T R A T I G R A P H I C D A T A											C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S				
RSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						% ABUN. DANCE				THICK-NESS		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
INTERVAL (TOTAL)																		Coals analyzed M/7-25-69		
Note:																		See Site 49-2 for total interval.		
6" - 1'	St sh																	Clayey; interbedded; blocky; plt. frgs., a; vitrain stringers; sulfur flowers.		
	Cs				N4													Interbedded; hackly; plt. frgs., a; vitrain stringers.		
16' 0"	Ss	2' 6"		S	N5													Silty; subfissile; bedding 1' - 2'; slabby, blocky; silt to very fine-grained; hard; upper 6" - 1' is root-worked.		
	St st	2' 0"		G	N3 - N4													Subfissile; 1' - 2' bedding; slabby, blocky; plt. frgs., c; siderite nodules.		
	St sh	0' 6"		G	N3													Fissile; chippy, blocky; plt. frgs., leaves, a.		
	St sh	2' 0"		G	N4													Fissile; chippy, blocky; plt. frgs., leaves, c.		
	St sh	3' 0"		G	N3													Fissile; chippy; sand laminae, r; beds 1/32" - 1/8".		
	Cl sh	6' 0"		G	N2 - N3													Fissile; chippy; siderite nodules to 1" in bands; plt. frgs., leaves, r; Lingula sp. collected at 1' above bottom; beds 1/32" - 1/8".		
2' 3"	Coal	1' 1"	14-27		N1	+				+	+		0.7	24.8	64.1	10.5	2.26	13621	Pyrite-fusain partings to 1/4", scattered throughout.	
	Coal	1' 2"	0-14		N1	+				+	+		0.9	23.4	60.1	15.5	4.36	12655	Persistent Cs partings at 4" and 7 1/2" from bottom. Pyrite-fusain partings to 1/4", scattered throughout.	
													0.8	24.1	62.0	13.1	3.35	13120	Seam average of 49-C-5, Lower Kittanning (B) coal.	
10" - 1'	Uc	4" - 6"		S	N2														Hackly; rootlets, a; weathered Cs; frag's. - 1/2".	
	Coal	0" - 3"	0-3	S	N1														Consists of one or more coal stringers. Not sampled.	
	Cs	4" - 6"		S	5Y 6/1														Hackly; frag's. - 1/2".	
1' 11"	Coal	0' 11 1/2"	11 1/2-23	S	N1			+		+	+	+	MD	0.8	20.5	52.4	26.3	4.62	10792	Cubic to splintery fracture; fusain, a.
	Coal	0' 11 1/2"	0-11 1/2	S	N1			+		+	+	+	MD	0.7	22.6	51.7	25.1	4.86	11082	Cubic to splintery fracture; fusain, a.
														0.7	21.6	52.1	25.7	4.74	10937	Seam average of 49-C-4, Lower Kittanning (B) coal.
6" - 9"	Cs			S	5Y 6/1														Hackly; pyritic, carbonaceous; frag's. - 1/2".	
0' - 6"	Coal		0-6	S	N1			+		+			MB	1.0	23.0	49.0	27.0	10.84	10598	Cubic to irregular fracture; fusain, pyrite, a. 49-C-3, Lower Kittanning (B) coal.
6' 6"+	Uc	3' 0"		S	N4															Hackly; rootlets, a; weathered Cs.
	Cl	3' 6"+		G	N4															Hackly; hard. Unit 1 is mined; frag's. - 1/2".

SITE/STATION NO.		49-2		LAT °N.		39°50'11"		COUNTY		Fayette		WEATHERING		fresh		JOINTING				
COAL SAMPLE NO.(S)		49-C-6		LONG °W.		79°29'24"		TWP.		Stewart		COMMENTS Units 12 - 16 were inaccessible. See Site								
COMPANY		Kaiser Refractories		GEOLOGISTwee/rds		15' QUADRANGLE		Confluence		49-1 (mine permit 309-1) for Units 1 - 8. Coal (Units										
MINE Potato Ridge		PERMIT 390-1		DATE 6-6-68		7 1/2' QUADRANGLE		Ohiopyle		2, 4, & 6 of Site 49-1) discarded; clay (Unit 1, Site 49-1)										
COAL(S) REPORTED		Lower Kittanning (B) rider.								only used. Generally uniform highwall.										
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE	THICK - NESS												
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"											
Coal analyzed M/7-25-69																				
T	75'																			
16		cover																		
15	10' 0"	Ss																		
14	2" - 4"	Coal		0-4		N1												Local fluvial channel coal?		
13	17' 0"	Ss																6" - 1' thick beds.		
12	0" - 1'	Coal		0-12		N1												Bony; local fluvial channel coal?		
11	5' - 25'	Ss																1' - 2' thick beds; grain size variable; variable interval laterally; beds 1' - 2'.		
10	0' 10"	Coal		0-10	S			+		+	0.9	30.6	57.8	10.6	6.35	13550		Granular fracture; thin fusain partings, c. 49-C-6, Lower Kittanning (B) rider coal.		
9	11' 6"	Uc	10' 6"- 11' 0"		S	N5												Silty; hackly; siderite nodules to 2", r; weathered		
		St st	6" - 1'			N4											Rubbly; hard. Unit 9 is interbedded.			
	Note:																	See Site 49-1 (mine permit 309-1) for units 1 - 8.		

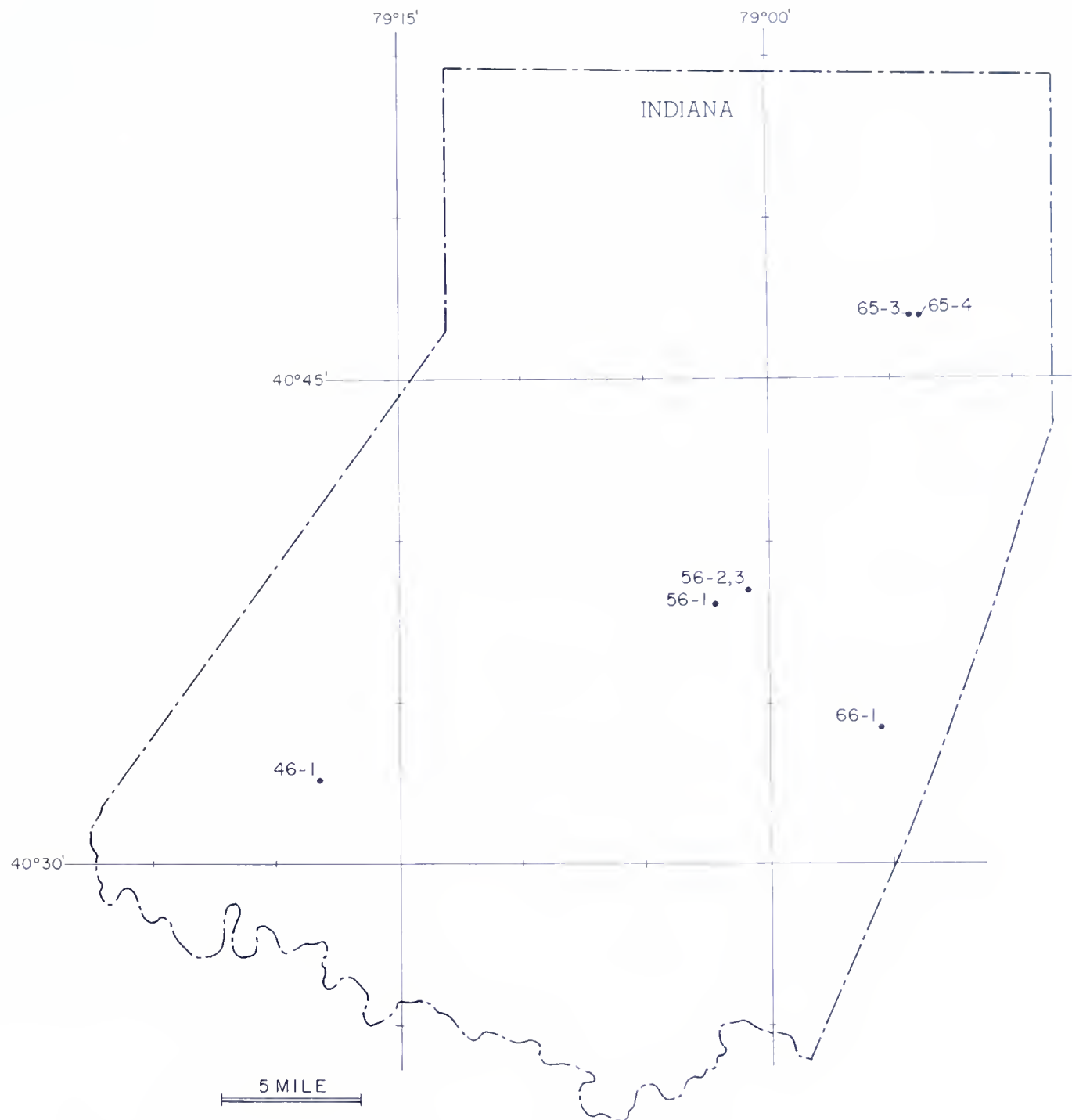


S T R A T I G R A P H I C D A T A														C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L								P R O X I M A T E (%)				S U L F U R (%)	A I R D R Y I N G L O S S (%)	B R I T I S H T H E R M A L U N I T S		
NUMBER	INTERVAL (TOTAL)						A N T H R A X Y L O N								A T T R I T U S L U S T E R	M O I S T U R E	V O L A T I L E	F I X E D C A R B O N					A S H
							% A B U N - D A N C E				T H I C K - N E S S												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
T	32'																		Coals analyzed M/7-25-69				
3		cover																					
2	28' 0"	Sh	10' 0"																				
		Cl sh	16' 0"		G	N3													Slabby; beds $\frac{1}{4}$ " - $\frac{1}{2}$ ".				
		St sh	2' 0"		G	N2													Subfissile.				
1	4' 7"	Coal	1' 1"	42-55	S	N1					+	MD	0.8	33.0	52.3	13.9	1.16	12606	Thin pyrite laminae, a.				
		Coal	1' 2"	28-42		N1	+	+			+	MB	0.9	34.1	56.2	8.8	0.81	13502					
		Sh	0' 2"		S														Parting.				
		Coal	1' 2"	12-26	S	N1		+			+	MD	0.9	34.1	55.4	9.6	0.93	13453					
		Coal	1' 0"	0-12		N1		+			+	MD	1.0	31.5	52.1	15.4	2.68	12558	Clay-fusain parting near bottom contains plt. frgs.				
													0.9	33.3	54.1	11.8	1.35	13055	Seam average of <u>29-C-2</u> , Sewickley coal.				



SITE NO. 98-2 (page 1)

SITE/STATION NO. 98-2 (page 2)			LAT °N. 40°13'15"			COUNTY Huntingdon			WEATHERING moderate			JOINTING							
COAL SAMPLE NO.(S) 98-C-2			LONG °W. 78°09'15"			TWP Carbon			COMMENTS										
COMPANY Adam & Ruth Black Coal Co.			GEOLOGIST wee/gbg			15' QUADRANGLE Broad Top													
MINE			PERMIT 182-1			DATE 10-14-68			7 1/2' QUADRANGLE Saxton										
COAL(S) REPORTED Barnett.																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)				
							% ABUN - DANCE	THICK - NESS								ATTRITUS LUSTER			
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"										
T	44' - 57'																		
11	10' +	Cl sh				N4 - N5											Fissile; beds 1/8" - 1/2"; chippy; leaves, a; lower 3" black with plt. frgs., c; <u>Neuropteris</u> sp. in weathered zone; 1' dark zone 6' from base.		
10	0' 10"	Sh	0' 4"		S	N1											Coaly.		
		Cs	0' 1"			N2											Parting.		
		Coal	0' 5"	0-5		N1			+		+	D					Lower 1" a coaly Sh.		
9	3' 6" - 12' 0"	Sts	1' 0"			N3											Fissile; beds 1"; rubbly.		
		Cl sh	2' 6" - 11' 0"			N3 - N4											Fissile; beds 1/4" - 1"; splintery, hackly; silty near top and bottom.		
8	7' - 8'	Cs	1' 0"		S	5Y 6/1											Rootlets, c; coated with limonite.		
		Cs	1' 0"		G	5Y 6/1											Friable, frag's. + 1/2".		
		Cs	5' - 6'		G	N3											Silty; subfissile; frag's. + 1/2"; rubbly; limestone nodules to 2"; rootlets, c; Fe-stain; weathers clayey; N4 at top.		
7	1' - 2'	Ls?	1' - 2'		S	N4											Subfissile; solid; limonite zone.		
6	16' 0" - 16' 6"	Cs	5' 0" - 5' 6"		S	N6											Silty; subfissile; frag's. 1/2" ±; hackly; rubbly; plt. frgs., c; limonite-clay nodules to 2", c.		
		Sts	11' 0"		S	N4											Fissile; beds 3" - 1'; blocky, rubbly; siderite nodules 2" + diameter, r; very fine- to fine-grained; lower is sandy.		
5	0" - 7"	Coal		0-7	S	N1	+			+	B						Fine, cubic fracture.		
4	3' 0" - 3' 6"	Sts	1' 0" - 1' 6"		S	N4											Frag's. - 1/2"; rubbly; plt. frgs., c; slickensides.		
		Ss	2' 0"		G	N5											Fissile; beds 1/2" - 3"; blocky; mica l, c; <u>Stigmara</u> , very fine-grained, carbonaceous.		



SITE/STATION NO.		46-1		LAT °N.		40°32'36"		COUNTY		Indiana		WEATHERING		JOINTING									
COAL SAMPLE NO.(S)		46-C-3		LONG °W.		79°18'27"		TWP.		Young		COMMENTS											
COMPANY				Homer City Coal Co.				GEOLOGIST		tmb		15' QUADRANGLE		Elders Ridge									
MINE		#3 strip		PERMIT		38-2		DATE		6-28-66		7 1/2' QUADRANGLE		McIntyre									
COAL(S) REPORTED				Upper Freeport (E).																			
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
T	10' - 17'																						
6	few '+	Ss				10YR 8/2												Fissile; beds 1/2" - 3"; mica, r; fine-grained, fair sorting, clay matrix; dark minerals, r; weathered.					
5	4' - 5'	Cs			S	5Y 8/1												Silty; Ss fragments.					
4b	4' - 12'	Ss				N6 - N7												Fissile; beds 1/4" - 3"; platy; mica, r; plt. frgs., r; very fine-grained, clay matrix.					
		Sts	12' 0"		L	N5												Fissile; beds 1/32" - 1/4"; chippy; mica, c; carbonaceous material, r; coaly laminae. Unit 4b: Interlaminated; becomes 4' thick Cl sh (Unit 4a) to the west.					
4a		Cl sh	4' 0"		G	5Y 6/1												Fissile; beds 1/32" - 1/2"; platy, chippy; coarser upward. Unit 4a: Becomes 10' - 12' thick lss st (Unit 4b) the east.					
3	0' 7"	Cl sh			S	N4												Fissile; beds 1/4" - 1/2"; platy.					
2	4' 4"	Coal	2' 5"			N1	+		++	MD -D	0.9	28.5	65.8	4.8	1.12	14380		Cubic, rough fracture; pyrite partings, c; pyrite lenses to 2".					
		Coal	1' 3"	8-23		N1	+		++	D	0.8	23.3	56.3	19.6	0.83	11930		Cubic, rough fracture; thinner bedded near top.					
		Coal	0' 8"	0-8	S	N1	+		++	MD -D	0.9	29.0	63.9	6.2	1.56	14030		Rough fracture; pyrite partings near top, r.					
											0.9	27.1	62.8	9.3	1.10	13619		Seam average of 46-C-3, Upper Freeport (E) coal.					
1	few "	Uc			S	N4												Slightly silty; solid; rootlets, a.					

SITE/STATION NO.		56-1		LAT °N.		40°38'10"		COUNTY		Indiana		WEATHERING		JOINTING						
AL SAMPLE NO.(S)		56-C-1		LONG °W.		79°02'08"		TWP.		Cherryhill		COMMENTS Units 6 - 11 inaccessible.								
COMPANY		Mears Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Indiana										
NE Head # 5		PERMIT 3-4		DATE		6-29-66		7 1/2' QUADRANGLE		Clymer										
AL(S) REPORTED Clarion coal.																				
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES				C O M M E N T S		
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON					ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
						% ABUN - DANCE		THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"										
42' - 50'																				
	Coal																		Lower Kittanning (B) coal.	
15' 0"	Sh																			
2' - 3'	Ss																			
2' 0"	Cl sh																		Fissile; beds 1/4" - 1/2"; solid; platy.	
0' 3"	Coal																		Blossom.	
3' - 4'	Cl sh				5Y 4/1														Beds 1/4" - 1/2"; solid; platy.	
	Ss				5YR 8/1 N 7														Beds 3" - 1'; mica, c; very fine- to fine-grained, excellent sorting, clay matrix; silica cement predominant in upper portion.	
10' - 12'	Cl sh			S	N3 - N5														Slightly silty; siderite concretions, r; mica, r; <u>Juresania</u> sp. (near top); Ss lenses, coarser upward. Cl sh predominant in lower portion. Unit 5: interbedded upward as shown.	
0' 4"	Cl			S	N4														Solid; extremely friable; appears to partially cut out Unit 3.	
6' - 10'	Cl sh			S	N3 - N4														Fissile; beds 1/32" - 1/2"; platy, chippy, hackly; siderite concretions, r; mica, r; pelecypods and <u>Lingula</u> sp., a, collected near bottom.	
3' 6"	Coal	0' 3"	39-42		N1			+	+	+	VD	0.9	15.9	43.2	40.0	0.69		8720	Bone; cubic fracture.	
	Coal	0' 7"	32-39		N1				+	+	VD	0.8	16.5	43.8	38.9	1.32		8890	Bone; rough fracture.	
	Coal	2' 1"	7-32		N1		+			+	MD	0.6	21.9	62.7	14.8	1.44		12620	Cubic, rough fracture.	
	Cl sh	0' 2"																	Parting; dense; carbonaceous.	
	Coal	0' 5"	0-5	S	N1			+	+	+	D	0.6	23.4	58.6	17.4	1.30		12180	Cubic fracture.	
												0.7	20.7	57.4	21.2	1.35		11620	Seam average of 56-C-1, Clarion coal.	
	Uc			S	N3														Fissile; beds 1/32" - 1/4"; chippy; <u>Calamites</u> sp. leaves, a.	

SITE/STATION NO.		56-2		LAT °N.		40°38'32"		COUNTY		Indiana		WEATHERING		fresh		JOINTING													
COAL SAMPLE NO.(S)		56-C-2		LONG °W.		79°00'49"		TWP.		Cherry Hill		COMMENTS																	
COMPANY				Shick Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Indiana															
MINE		Shick #7 strip		PERMIT		252-2		DATE		7-27-66		7 1/2' QUADRANGLE		Clymer															
COAL(S) REPORTED				Lower Kittanning (B).																									
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS										
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH								
							% ABUN - DANCE				THICK - NESS																		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"						
T	25'																												
3		cover																Soil.											
2	20' 0"	Ss				N6												Beds 1/2" - 3"; lower 5' cross-bedded; mica, c; very fine- to fine-grained; clay matrix, c; dark mineral r; carbonaceous material, r.											
1	4' 5"	Bone Coal	0' 7" 3' 10"	0-46	U	N1	+			+	+	D	1.0	26.4	64.2	8.4	2.72	13790 Pyrite. 56-C-2, Lower Kittanning (B) coal. 2° dip to E.											

STATION NO.	56-3	LAT °N.	40°38'34"	COUNTY	Indiana	WEATHERING	JOINTING
SAMPLE NO.(S)		LONG °W.	79°00'50"	TWP.	Cherry Hill	COMMENTS	This measured section is the normal highwall.
COMPANY	Shick Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	Indiana	There is a slump and/or high-angle cross-bedding	
Shick # 7	PERMIT 252-2	DATE	6-29-66	7 1/2' QUADRANGLE	Clymer	channel fill.	
L(S) REPORTED	Upper Kittanning (C') ?						

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
						% ABUN - DANCE		THICK - NESS													
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
29'																					
12' 0"	Ss, Sts St sh																	Fissile; beds 1/4" - 3"; platy; mica, r; interlaminated and interbedded. Upper portion inaccessible.			
0' 6"	Ss			S	N7													Fissile; beds 1/2" - 3"; ripple marks; mica, r; very fine-grained, clay matrix.			
3' 0"	Sts			S	N3 - N4													Fissile; beds 1/4" - 3"; platy; mica, r.			
2' 0"	lss st			S	N3 - N5													Beds 3"-1'; ripple marks; mica, r; silt to very fine-grained (coarser upward), clay matrix.			
8' 0"	Cl sh & Sts			S	N4 - N6													Fissile; beds 1/32" - 3"; platy, chippy; mica, r; interbedded. Sts is siliceous.			
1' 6" - 2' 0"	Coal		0-24	S	N1	+				++		MD						Upper Kittanning (C') ? coal.			
1' 6"+	Uc			C	N4													Solid; rootlets, a.			

STATION NO.	65-4	LAT °N.	40°47'02"	COUNTY	Indiana	WEATHERING	fresh	JOINTING	
SAMPLE NO.(S)	65-C-2	LONG °W.	78°53'47"	TWP.	Montgomery	COMMENTS	Units 4 - 5, channel deposits.		
PANY	Lamkie Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Punxsutawney				
Lamkie strip	PERMIT 107-1	DATE	7-6-67	7 1/2' QUADRANGLE	Rochester Mills				
L(S) REPORTED	Upper Freeport (E).								

S T R A T I G R A P H I C						D A T A						C O A L C H E M I C A L A N A L Y S E S						C O M M E N T S	
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						A N T H R A X Y L O N				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% A B U N - D A N C E		T H I C K - N E S S											
						> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
58'																	Coals analyzed M/7-7-69		
30' 0"	Cs				5Y 6/1- 5Y 4/1												Silty; frag's. - $\frac{1}{2}$ "; equant, hackly; channel axis N10°E.		
4' 0"	Ss			S	5Y 6/1												Silty; solid; rubbly; channel axis N10°E; mica l - 2, c; plt. frgs., r; silt to very fine-grained, fair sorting, clay matrix.		
20' 0"	St sh	13' 0"		U	5Y 6/1												Fissile; beds 1/8" - $\frac{1}{2}$ "; chippy; mica l, c; plt. frgs., c.		
	St sh	7' 0"		G	N5												Fissile; beds 1/8" - $\frac{1}{2}$ "; chippy; mica l, c; plt. frgs., c.		
4' 2"	Coal	0' 8"	42-50	S	N1 - N2	+			+	+	D	0.8	28.8	61.6	8.8	2.06	13720	Bony; cubic fracture; knife-edge partings, c.	
	Coal	3' 6"	0-42	G	N1	+			+	+	VB	0.8	29.5	61.6	8.1	1.59	14000	Cubic to splintery fracture; MD upward.	
												0.8	29.4	61.6	8.2	1.67	13955	Seam average of 65-C-2, Upper Freeport (E) coal.	
	Uc																		

500 Yards
(Vert. exaggerated)

Channel axis trends N10°E

PLAN VIEW OF SECTION BELOW

FINAL CHANNEL PLUG

UNCONFORMITY

30'

58'

42' to 4'

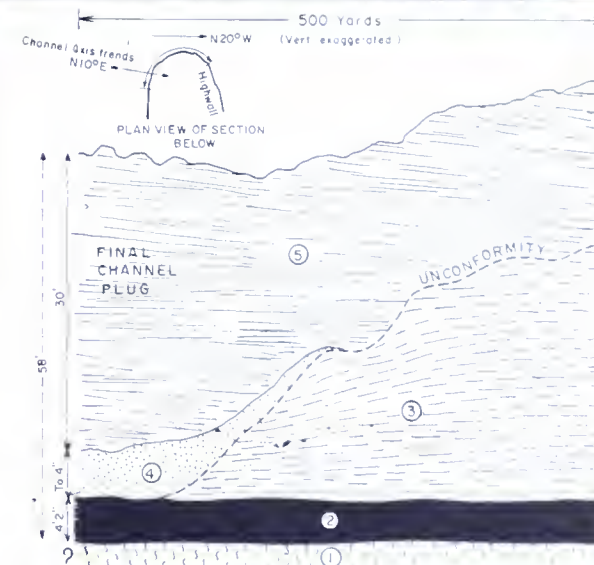
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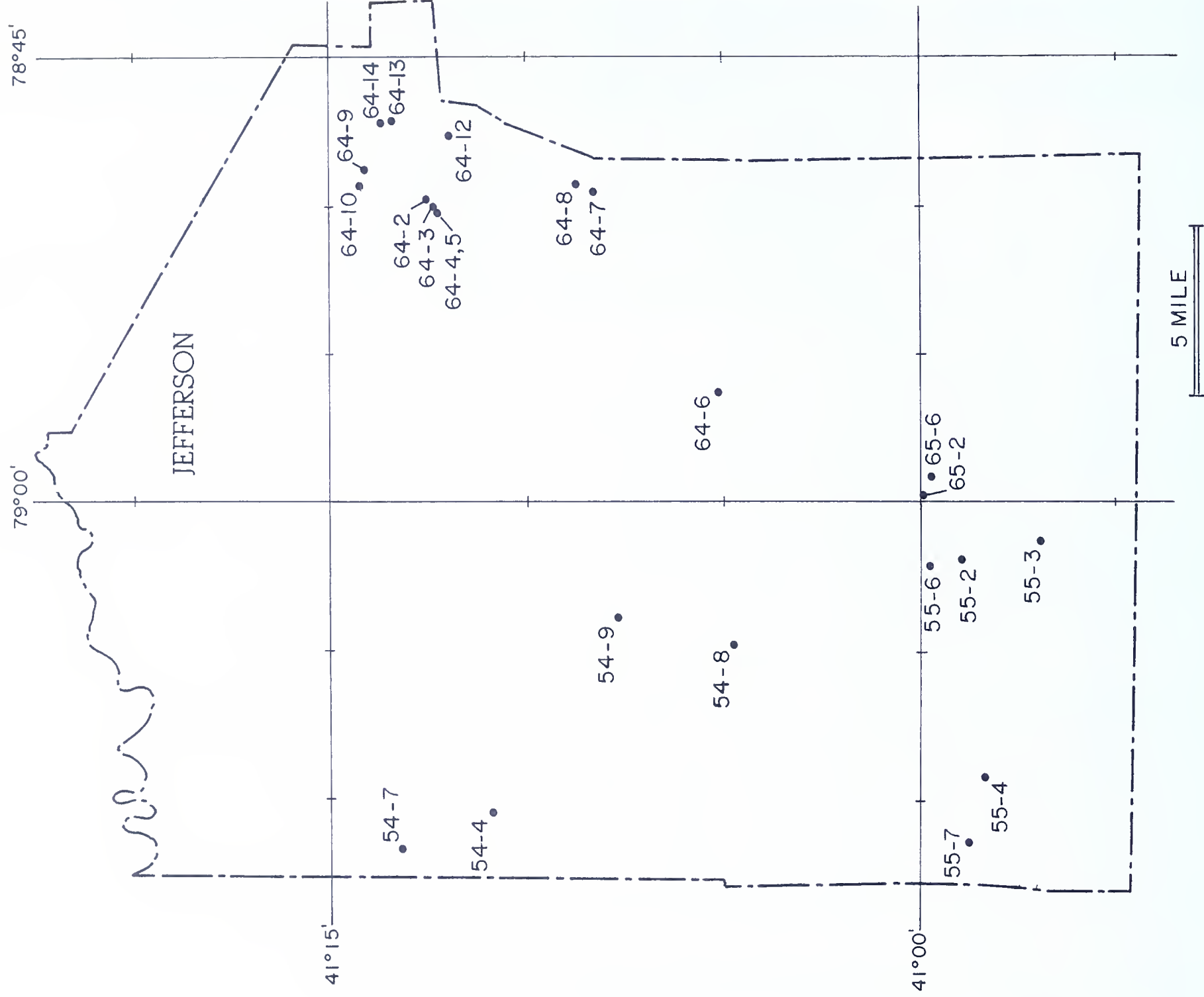
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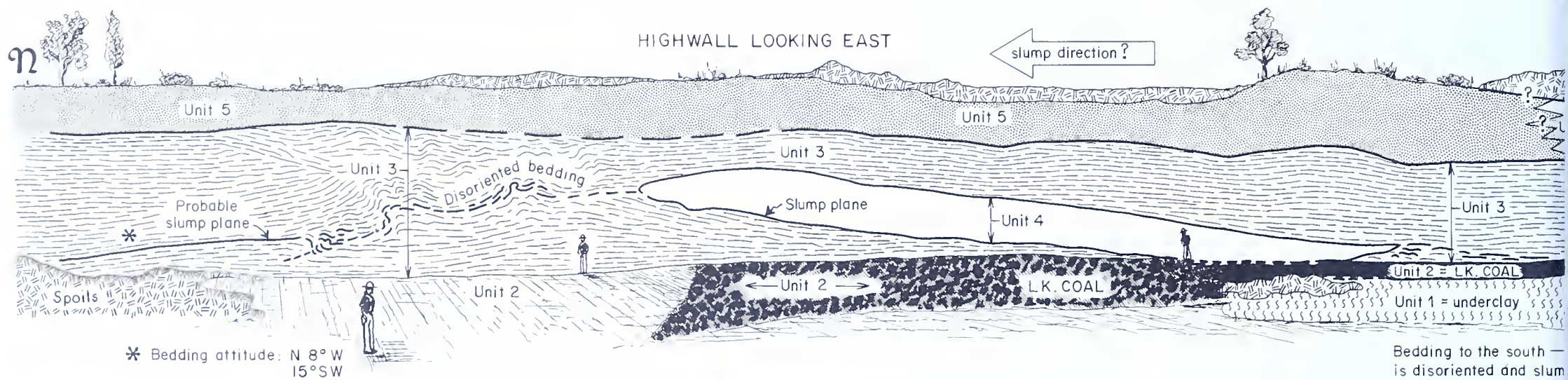
SITE/STATION NO.		66-1 (page 1)		LAT °N.		40°34'14"		COUNTY		Indiana		WEATHERING		JOINTING													
COAL SAMPLE NO.(S)				LONG °W.				78°55'28"				TWP.		Pine		COMMENTS		Units 14 - 17 inaccessible.									
COMPANY				Beilchick Brothers				GEOLOGIST		tmb		15' QUADRANGLE		Barnesboro													
MINE				Malloy Hollow				PERMIT		95 - 1A2		DATE		6-28-66		7 1/2' QUADRANGLE		Strongstown									
COAL(S) REPORTED				Lower Freeport (D).																							
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS						
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH				
							% ABUN - DANCE																				
							THICK - NESS																				
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																		
5	1' 8"	Ss			S	N7													Beds 1' - 2'; mica, r; medium-grained, good sorting subangular, clay matrix, silica cement; clay galls a; good porosity, permeable.								
4	7' 0"	Cl sh			S	N4													Fissile; beds 1/32" - 1/2"; platy; chippy, hackly; 3 Ss beds (2" thick) near top.								
3	10' ±	Ss	2' ±			N7													Beds 1/2" - 1'; cross-beds dip 25°SE, bearing N15°E mica; very fine- to fine-grained, good sorting, angular, clay matrix, dark minerals, clay galls, r fragments.								
		Sts	6' 6" ±			N4													Fissile; beds 1/32" - 1/2"; platy, chippy; carbonaceous material.								
		Cl sh	1' 6"		S	N3 - N4													Slightly silty; fissile; beds 1/32" - 1/4"; chippy, hackly; dark Sh with fern-like plant fossils at bottom. Unit 3: Grades upward, as shown.								
2	0' 5"	Coal			S	N1													Nonbanded.								
1	3' 0"	Coal		0-36	S	N1	+			+		MB							Weathered and wet; bottom covered; splintery fract thin pyrite, c. Lower Freeport (D) coal.								

STATION NO. 66-1 (page 2)		LAT °N. 40°34'14"		COUNTY Indiana		WEATHERING		JOINTING													
SAMPLE NO.(S)		LONG °W. 78°55'28"		TWP. Pine		COMMENTS Units 14 - 17 inaccessible.															
COMPANY Beilchick Brothers		GEOLOGIST tmb		15' QUADRANGLE Barnesboro																	
Malloy Hollow PERMIT 95-1A2		DATE 6-28-66		7 1/2' QUADRANGLE Strongstown																	
(S) REPORTED Lower Freeport (D)																					
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
							ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE	THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
74'																					
	cover																				
few "	Coal																				Blossom.
0' +	Cl sh & Sts				S																Beds 1/4" - 3"; platy; grades upward from Cl sh to Sts.
0' 5"	Bloss?				G	N1															Undifferentiated, possibly coal blossom, dark Sh, or wet zone at top of Unit 13.
5' +	Clay				S	5Y 6/1															Plastic; siderite and limonite concretions, c.
6' - 7'	Ss				G	5Y 6/1															Beds 3" - 2'; fine-grained (finer upward); lensoid and imbricated.
0' 0"	Cs				S	N4, 5Y 4/1															Color - variable; solid; siderite and/or limonite concretions near top.
2' 0"	Ls				S	N4															Micritic; Fe-stain.
5' 0"	Cs				S	5Y 6/2															Solid; rootlets; calcareous zones, r; 5" - 8" Cl sh, N1, at bottom, grades into Cs.
2' 0"	Cs				S	5Y 5/2															Solid; thin Cl sh beds, N2, at bottom.
3' 6"	Cs				S	5Y 7/2															Silty; solid; slickensides; rootlets. A weathered zone of Unit 6?
	Ss					5Y 7/2															Beds 1/2" - 1'; fine-grained, good sorting, siderite cement?; clay galls; permeable, good porosity. Interbedded in Unit 6.
8' 0"	Sts Cl sh				G	5Y 6/2 N4, 5Y 6/2															Fissile; beds 1/4" - 3"; platy; mica, r. Interlaminated. Slightly silty; fissile; beds 1/32" - 3"; platy; chippy; interlaminated. Unit 6: Interlaminated and interbedded.



STATION NO.	54-4	LAT °N.	41°10'56"	COUNTY	Jefferson	WEATHERING	slight	JOINTING	
CL SAMPLE NO.(S)	54-C-1	LONG °W.	79°10'28"	TWP.	Union	COMMENTS	Interval to Middle Kittanning (C) appears to be 70'.		
COMPANY	W.P. Stahlman Co.	GEOLOGIST	tmb	15' QUADRANGLE	Brookville				
ENGINEER	Sherman-Stahlman	PERMIT	9-16A2	DATE	6-19-67	7 1/2' QUADRANGLE	-		
CL(S) REPORTED	Lower Kittanning (B).								

S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES					C O M M E N T S	
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS					
						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH										
						% ABUN - DANCE										THICK - NESS									
						> 60	30 - 60	15 - 30	0 - 15								> 1/4"					1/8" - 1/4"	1/32" - 1/8"	< 1/32"	
INTERVAL (TOTAL)																			Coals analyzed M/7-7-69						
25' - 41'																									
15' 0"	Sts				N4														Subfissile; beds 1/4" - 3"; chippy, slabby, hackly; mica l, c. Lateral equivalent of unit 5.						
0' - 7'	Ss				5Y 7/1														Beds 3" - 2'; chippy, slabby, hackly; very fine-to fine-grained, excellent sorting, clay matrix. Lateral equivalent of unit 6, into which it appears to grade to the south.						
0' - 8'	Cs				N4 - 5Y 4/1														Frag's. 1/2"±; hackly, rubbly. Large lens-like pod within unit 3.						
18' - 27'	Cl sh - Cs				N1														Subfissile; beds 1/2" - 1', frag's. 1/2"±; hackly, rubbly; siderite nodules to 5", a; becomes N4 upward. Part of the slump block thickness depends on where measured.						
2' 10"	Coal	1' 0"	22-34	S	N1		+			+	MD	1.1	39.7	51.7	7.6	0.88		13744	Cubic to platy fracture.						
	Coal	0' 1"			N1														Bone.						
	Coal	1' 1"	8-21		N1	+				+	D	1.5	34.1	57.3	7.1	0.96		13502	Cubic to rough fracture; bony layers and discontinuous pyrite partings, r.						
	Coal	0' 8"	0-8		N1	+				+	MD	1.5	33.0	57.1	8.4	1.80		13356	Cubic fracture.						
												1.4	35.9	55.2	7.6	1.13		13554	Seam average of 54-C-1, Lower Kittanning (B) coal.						
4'+	Uc			S	5Y 4/1														Frag's. 1/2"±; hackly, rubbly; rootlets, c.						



SITE NO. 54

STATION NO. 54-7		LAT °N. 41°13'22"		COUNTY Jefferson		WEATHERING fresh		JOINTING											
CL SAMPLE NO(S) 54-C-3, -4, -5		LONG °W. 79°11'34"		TWP. Union		COMMENTS Described while raining.													
COMPANY H. & G. Coal & Clay Co.		GEOLOGIST adg		15' QUADRANGLE Brookville															
H. & G. Strip PERMIT 75-8		DATE 6-13-68		7 1/2' QUADRANGLE -															
L(S) REPORTED Brookville or Craigsville; Lower Clarion and Upper Clarion.																			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S				
COSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE		THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"						
66'																			
20' 0"	Ss																		Mica 1, c; fine-grained; beds 3" - 2'.
5' 0"	Cl sh			S	N4				+		+	D							Subfissile; siderite nodules; beds 1/8" - 1/4".
2' 6"	Coal	1' 5 1/2"	12 1/2 - 30	S	N1				+		+	D							Bony; not sampled.
	Coal	1' 1/2"	0 - 12 1/2		N1			+			+	MD	1.0	40.4	48.5	10.1	3.44	13274	54-C-5, Upper Clarion coal.
4' 3"	Uc			S	N6														
2' 5"	Cl sh			S	N4														Silty; subfissile; slickensides; beds 1/8" - 1/4".
2' 8 1/2"	Coal	1' 8 1/2"	12 - 32 1/2	S	N1		+			+		MB	1.0	39.4	50.2	9.5	3.37	13502	Pyrite.
	Sh	0' 4 1/2"		S															Parting, bony.
	Coal	0' 7 1/2"	0 - 7 1/2	S	N1		+			+		MD	0.9	35.3	44.5	19.2	5.02	11550	Thin shale partings at bottom.
													1.0	38.3	48.7	12.1	3.81	12979	Seam average of 54-C-4, Lower Clarion coal.
25' 0"	Cs			S	N4														Subfissile; upper 3' - 4' is root-worked; beds 1/2" - 3".
4' 9 1/2"	Coal	0' 8"	49 1/2 - 57 1/2	S	N1			+		+		MB	0.7	35.6	46.8	16.8	6.74	12244	Pyrite.
	Bone	0' 7"		S															Parting.
	Coal	1' 8 1/2"	22 - 42 1/2	S	N1		+			+		MB	1.1	37.4	50.7	10.8	4.18	13174	Pyrite streaks.
	Coal	0' 10 1/2"	11 1/2 - 22	S	N1								0.8	29.7	51.0	18.5	2.89	11832	Pyrite streaks.
	Coal	0' 11 1/2"	0 - 11 1/2	S	N1		+			+		B	0.9	37.7	50.8	10.6	2.30	13018	Knife-edge parting at top of bench.
													0.9	35.6	50.2	13.3	3.89	12712	Seam average of 54-C-3, Brookville coal.

SITE NO. 54-8

SITE/STATION NO.		54-9		LAT °N.		41°07'44"		COUNTY		Jefferson		WEATHERING		extreme		JOINTING							
COAL SAMPLE NO(S)		54-C-7		LONG °W.		79°03'57"		TWP		Knox		COMMENTS											
COMPANY		Robert L. Emery		GEOLOGIST		adg		15' QUADRANGLE		Brookville		Operator drilled down 60' below lower coal (unit 1) here and found nothing.											
LINE		Emery strip		PERMIT		478-1		DATE		6-22-68		7 1/2' QUADRANGLE		-		*Looks like Lower Kittanning (B) coal according to Brookville atlas, 20' - 30' above Vanport Ls structure.							
COAL(S) REPORTED		Lower Freeport (D)?*																					
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH										
							% ABUN-DANCE	THICK-NESS															
														60	30	15					0	1/4"	1/8"
	41' - 44'																	Coals analyzed M/7-25-69					
		cover																Soil.					
	10'+	Ss				N7												Fissile; platy, flaggy; large-scale cross-bedding (dips directly west); very fine-grained; beds 1/2" - 1'.					
	0' - 3'	Cl sh			U	5Y 4/1												Fissile; platy; cut out by Ss (unit 7); beds 1/8" - 1/4".					
	1' 2 1/2"	Coal	0' 7 1/2"	7-14 1/2	S	N1		+		+		D						Very bony; too weathered to sample.					
		Coal	0' 7"	0-7	S	N1		+		+		MB						Too weathered to sample.					
	3' 0"	Cl			S	5YR 6/1												Plastic.					
	9' 0"	Cl sh			G	5Y 6/1												Fissile; platy; beds 1/4" - 1/2".					
	14'	Cl sh			S	N3, N6												Fissile; platy; plt. frgs., very fine-grained; thin sandstone laminae; 0" - 2" siderite band 4' 6" above coal; beds 1/4" - 1/2".					
	3' 6"	Bone	0' 9"		S			+		+		D						Thin coaly streaks, r.					
		Coal	0' 10"	23-33	S	N1		+			+	MD	1.0	39.3	51.8	7.9	1.26	13623 Slightly bony.					
		Coal	1' 11"	0-23	S	N1		+			+	MB	1.0	35.6	53.4	9.9	4.93	13357 Slightly pyritic.					
													1.0	36.7	52.9	9.3	3.82	13438 Seam average of 54-C-7, Lower Kittanning (B)? coal.					

SITE/STATION NO.		55-2		LAT °N.		40 °58'58"		COUNTY		Jefferson		WEATHERING		fresh		JOINTING: N35°W & N60°E, N20°W & N55°E						
COAL SAMPLE NO(S)				LONG °W.		79°01'54"		TWP.		Oliver & Perry		COMMENTS				: N75°W & N15°E, N-S & E - W						
COMPANY		P. & N. Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Smicksburg						Laterally uniform highwall.						
MINE		Oliveburg No. 1		PERMIT		32-19		DATE		6-29-66		7 1/2' QUADRANGLE										
COAL(S) REPORTED				Middle Kittanning (C).																		
S T R A T I G R A P H I C										D A T A		C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE															
							> 60	30 - 60 *	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T	55'																					
4	20' 0"	Ss																Clayey; beds 1/2"-1'; slabby, blocky; mica 1-2, c; plt. frgs., c; fine-grained; Fe-stain; weathered.				
		Cs	10' 0"		G	5Y 6/1												Silty; beds 1/2" - 3"; slabby; weathered, extremely weathered.				
3	4' 0"	Sts	1' 0"		G	N2												Beds 1/2" - 3"; rubbly; hard.				
		Cl sh	2' 0"		G	N1												Silty; beds 1/4" - 1/2"; chippy, hackly.				
		Sts	1' 0"		G	N2												Beds 1/2" - 3"; blocky, rubbly; mica 1, c.				
2	28' 0"	St sh	1' 0"		G	N3												Beds 1/8" - 1/2"; chippy; plt. frgs., leaves, c.				
		lss sh	6' 0"		G	N3, N7												Beds 1/4" - 1/2"; chippy; plt. frgs., leaves, c.				
		St sh	11' 0"		G	N4												Beds 1/4"-1/2"; chippy; plt. frgs., leaves, c.				
		St sh	2' 0"		G	N4												Sandy; beds 1/4" - 1/2"; chippy; plt. frgs., leaves, c; sand laminae.				
		Sts	2' 0"		G	N4												Beds 1/2"-3"; rubbly; plt. frgs., leaves, c.				
		St sh	4' 0"		G	N4												Chippy to hackly upward; siderite bands, mica 1, c; plt. frgs., leaves, c.				
		St sh	2' 0"		G	N1												Subfissile; beds 1/32" - 1/8"; chippy; thin siderite bands, c; plt. frgs., leaves, c; dense, brittle.				
1	3' 4 1/2"	Coal	1' 10 1/2"	18-40 1/2	S	N1					B							Splintery fracture, except upper 3" (blocky); unper-sistent pyrite pods and partings, c. Augered.				
		Coal	1' 6"	0-18	S	N1					B							Hard; fusain, a; thin shale partings, c. Not mined. Unit 1: Middle Kittanning (C) coal.				

E/STATION NO.		55-3		LAT °N.		40°56'58"		COUNTY		Jefferson		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
AL SAMPLE NO.(S)		55-C-1		LONG °W.		79°01'06"		TWP		Young		COMMENTS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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SITE/STATION NO.		55-4		LAT °N.		40°58'19"		COUNTY		Jefferson		WEATHERING		slight		JOINTING					
COAL SAMPLE NO.(S)		55-C-2		LONG °W.		79°09'14"		TWP.		Ringgold		COMMENTS									
COMPANY		Everett Moore Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Smicksburg											
MINE		Coleman #1 strip		PERMIT		157-9		DATE		6-20-67		7 1/2' QUADRANGLE		-							
COAL(S) REPORTED		Lower Freeport (D).																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15							> 1/4"				
Coals analyzed M/7-7-69																					
T	48' - 54'																				
9	15'+	Ss				10YR 7/2												Beds 1/2" - 3"; slabby; fine to medium- grained, good sorting, dark minerals, r.			
8	0' - 3'	Coal			S	N1												Cut out in places by overlying Ss (unit 9). Upper Freeport (E) coal.			
7	5' - 8'	Uc			S	5Y 8/1												Frag's. - 1/2"; hackly; rootlets, a.			
6	11' 0"	Cl sh			G	5Y 6/2												Silty; fissile; beds 1/4" - 3"; chippy, slabby; silt to very fine-grained; interbedded Ss to 3" thick, r.			
5	4' 0"	Ss			S	5Y 6/2												Beds 1' - 2'; blocky; current ripples; mica 3, a; plt frgs., r; very fine-grained.			
4	3' 0"	Cl sh - Cs			S	5Y 5/2												Fissile, subfissile; chippy, slabby, hackly, rubbly; plt. frgs., leaves, c.			
3	4' 0"	Cl sh	3' 0"		S	N5												Slightly silty; subfissile; beds 1/4" - 3"; chippy, hackly, rubbly; mica 1, c; leaves, c; grades upward to lsc sh.			
		Cl sh	1' 0"		G	N4 - N7												Subfissile; beds 1/4" - 3"; chippy, hackly, rubbly; leaves, c.			
2	2' 7"	Coal	0' 5"	26-31	S	N1												Bone. Not sampled. Not mined.			
		Coal	0' 5"	21-26		N1		+			MD	1.1	34.1	59.0	5.9	2.32	13986	Fusain partings, r.			
		Coal	0' 9"	12-21		N1		+			MB	1.1	33.6	59.7	5.6	1.96	14010	Cubic to rough fracture; fusain partings at bottom and top, with small fusain-pyrite partings within, r.			
		Coal	0' 6"	6-12		N1		+			MD	1.0	33.9	56.8	8.2	2.50	13623	Cubic to rough fracture.			
		Coal	0' 1"	5-6		N1												Bone.			
		Coal	0' 5"	0-5		N1		+			B	1.1	33.2	56.9	8.9	2.99	13405	Cubic fracture; wet.			
											1.1	33.7	58.3	6.9	2.37	13791	Seam average of 55-C-2, Lower Freeport (D) coal.				
1	3'+	Uc			S													Frag's. 1/2"; hackly, rubbly; rootlets, a; Fe-stain in lower portion, a; 5Y 6/1, lower 2'; N5, upper 1'.			

SITE NO. 55-6

SITE/STATION NO.	55-7	LAT °N.	40°58'48"	COUNTY	Jefferson	WEATHERING	extreme	JOINTING	
COAL SAMPLE NO.(S)	55-C-5	LONG °W.	79°11'27"	TWP.	Ringgold	COMMENTS	Most of mine back filled; coal seen only in small exposure.		
COMPANY	Martin L. Snyder	GEOLOGIST	adg	15' QUADRANGLE	Smicksburg				
MINE	Snyder Strip	PERMIT	395-2	DATE	6-11-68	7 1/2' QUADRANGLE	-	Coal may be too weathered for a satisfactory analysis.	
COAL(S) REPORTED	Upper Freeport (E).								

COAL(S) REPORTED		S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
T	20'																	Coals analyzed M/7-25-69			
2	15'+	Ss				N6												Fine- to medium-grained; beds 3" - 1'.			
1	3' 5 1/2" - 4' 9 1/2"	Sh	4" - 7"		U													Bony; coaly. Appears to thin where cut out by over-lying Ss (unit 2).			
		Coal	0" - 13"	37 1/2 - 50 1/2		N1	+			+		MD	1.2	35.7	55.4	7.6	2.64	13744	Pyrite. Pinches out laterally, but does not appear to be cut out by Ss (unit 2).		
		Coal	1' 5 1/2"	20 - 37 1/2		N1	+			+		MB	1.2	37.1	56.5	5.2	2.16	14131	Blocky.		
		Coal	1' 8"	0 - 20		N1	+			+		MB	1.1	32.3	52.8	13.7	1.22	12768	Uneven fracture. Knife-edge parting at top.		
																			Seam average of 55-C-5, Upper Freeport (E) coal.		

SE/STATION NO.	64-2	LAT °N.	41°12'31"	COUNTY	Jefferson	WEATHERING	JOINTING
AL SAMPLE NO.(S)	64-C-2	LONG °W.	78°49'50"	TWP.	Washington	COMMENTS	*Survey identification: Upper Kittanning (C').
COMPANY	Minns Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	DuBois		
PERMIT	138-1	DATE	8-10-66	7 1/2' QUADRANGLE	Falls Creek		
AL(S) REPORTED	Lower Freeport (D)??						

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S				
COSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH								
						% ABUN- DANCE	THICK- NESS															
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
40'																						
12' 0"	Ss				5Y 7/1																	Beds 3" - 4' (thinner bedded upward); mica, a; fine-grained, clay matrix; top is carbonaceous.
5' 2"	Cl sh			S	10Y 5/2																	Nonfissile upward; beds 1/4" - 1/2"; platy, hackly; siderite concretions; mica, c.
0' 3"	Cl sh			S	N2, N3																	Slightly silty; fissile; beds -1/32" - 1/8"; top is carbonaceous, a; friable.
9' 6"	Cl sh			S	5GY 5/1																	Fissile; platy, chippy; siderite, hematite, and limonite concretions and nodules to 4" thick abundant upward; finer bedding upward.
7' 6"	lss st			G	N5																	Imbricated and cross-bedded; very fine-grained; very fine interlamination; grades imperceptibly upward into Cl sh (Unit 5).
2" - 3"	Cl sh			G	N4																	Slightly silty; fissile; beds 1/32" - 1/4"; chippy; gradation from Unit 2 to Unit 4.
3' 8"	Coal	0' 10"	28-38		N1	+				+	+	MB		1.2	29.5	63.8	5.5	0.64		13670		Cubic fracture; fusain near top, r.
	Coal	1' 7"	9-28		N1	+						+	MB	1.4	25.3	64.7	8.6	1.32		13320		Cubic fracture; peacock lustre; knife-edge pyrite; 1/2" fusain lenses, r.
	Fusain	0'-1/2"																				Parting, discontinuous.
	Coal	0' 9"	0-9	S	N1	+					+	+	D	1.2 1.3	25.4 26.4	56.7 62.6	16.7 9.7	3.77 1.72		12100 13123		Cubic fracture. Seam average of 64-C-2, Lower Freeport (D)? coal. Unit 2: Variable thickness; splits.
1'+	Uc			S	N4																	Subfissile; beds 1/4" - 1/2"; platy; mica; rootlets.

SITE/STATION NO. 64-3 (page 1)		LAT °N. 41°12'22"		COUNTY Jefferson		WEATHERING		JOINTING													
COAL SAMPLE NO.(S) 64-C-3		LONG °W. 78°50'05"		TWP. Washington		COMMENTS															
COMPANY Minns Coal Co.		GEOLOGIST tmb		15' QUADRANGLE DuBois																	
MINE Minns		PERMIT 138-1		DATE 8-11-66		7 1/2' QUADRANGLE Falls Creek															
COAL(S) REPORTED Lower Freeport (D).																					
S T R A T I G R A P H I C D A T A																					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						PROXIMATE (%)								
							% ABUN - DANCE				THICK - NESS		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
3	6' 6"	Sts			S	N6, 5Y 6/1												Beds 1' - 4'; solid; scattered limonite concretions and veinlets; mica; rootlets, r; some fining upward			
2	1' 0"	Uc			S	N5												Subfissile; beds 1/4" - 1/2"; platy; leaves, rootlets, r; 1/16" coal laminae at top, up to 1' 6" thick.			
1	10'+	Ss			S	N6 - N7												Beds 1/4" - 1/2" and 1' - 2'; platy; mica, c; fine- to medium-grained, good sorting, subrounded, clay matrix, silica cement; carbonaceous material, r; good porosity; interbedded with thin, clayey Sts beds, r.			
	5' 0"	cover																Covered interval (backfill), covers Upper Kittanning (C')?			

/STATION NO. 64-3 (page 2)		LAT °N. 41°12'22"		COUNTY Jefferson		WEATHERING		JOINTING										
SAMPLE NO(S) 64-C-3		LONG °W. 78°50'05"		TWP Washington		COMMENTS												
PANY Minns Coal Co.		GEOLOGIST tmb		15' QUADRANGLE DuBois														
Minns PERMIT 138-1		DATE 8-11-66		7 1/2' QUADRANGLE Falls Creek														
L(S) REPORTED Lower Freeport (D).																		
S T R A T I G R A P H I C D A T A C O A L C H E M I C A L A N A L Y S E S C O M M E N T S																		
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL				ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON												
						% ABUN - DANCE		THICK - NESS										
						> 60	30 - 60	15 - 30	0 - 15		> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"				
58'																		
8' 0"	Sts				5Y 6/2													Mica, a; carbonaceous material, r.
5' 0"	Cl sh				G N3													Slightly silty (coarser upward); fissile; beds 1/32" - 1/4"; chippy; ferns and <u>Annularia</u> ; thin Ss beds, r.
1' 2"	Ss				G 5YR 6/1													Weathers to 5GY 6/2; mica, a; medium-grained, fair sorting, dark minerals, c.
0' 9"	Sts				S N4													Fissile; beds 1/32" - 1/2"; platy, chippy.
1' 6"	Ss				S 5YR 6/1													Weathers to 5GY 6/2; mica, a; medium-grained, fair sorting; dark minerals, c.
5' 0"	Cl sh				S N3													Slightly silty (coarser upward); fissile; beds 1/32" - 1/4"; chippy; ferns and <u>Annularia</u> ; very thin Ss beds, r.
3' 1" - 3' 8"	Sh	0' 3"																Coaly shale.
	Coal	0' 10 1/2"	28 1/2 - 39		N1	+	+			+	+	MD	1.6	29.4	64.8	4.2	0.59	14050
	Fusain	0' 1 1/2"																Parting.
	Coal	0' 8"	20-28		N1	+	+			+	+	MD	1.7	29.9	65.8	2.6	0.65	14050
	Fusain	0' 1 1/4"																Parting.
	Coal	0' 11"	8 3/4 - 19 3/4		N1	+				+	+	MB	1.7	29.1	64.7	4.5	0.67	13710
	Fusain	0' 3/4"																Parting.
	Coal	0' 8"	0-8	S	N1	+				+	+	MB	1.7	27.6	61.2	9.5	1.17	12770
													1.7	29.0	64.2	5.1	0.75	13677
																		Seam average of 64-C-3, Lower Freeport (D) coal.
3' 8"	Uc				S 5Y 3/1													Solid; nonfissile.
2' 0"	Ls				S N7, 10YR 7/6													Solid; micritic.
4' 6"	Cl & Ls				S gr. & bn.													Solid; scattered Ls lenses and discontinuous beds to 6"; micritic.

SITE/STATION NO.		64-4 (page 1)		LAT °N.		41°12'16"		COUNTY		Jefferson		WEATHERING		JOINTING								
COAL SAMPLE NO.(S)				LONG °W.		78°50'16"		TWP.		Washington		COMMENTS										
COMPANY				Minns Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		DuBois										
MINE		Minns		PERMIT		138-1		DATE		8-11-66		7 1/2' QUADRANGLE		Falls Creek								
COAL(S) REPORTED				Lower Freeport (D).																		
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
		Sh	0' 3"														Coaly shale.					
		Coal	0' 10 1/2"	28 1/2 - 39		N1	+	+				+	+	MD				Parting.				
		Fusain	0' 1 1/2"																			
		Coal	0' 8"	20-28		N1	+	+				+	+	MD				Parting.				
		Fusain	0' 1/4"																			
		Coal	0' 11"	8 3/4 - 19 3/4		N1	+					+	+	MB								
		Fusain	0' 3/4"															Parting.				
1	3' 6"	Coal	0' 8"	0-8	S	N1	+					+	+	MB				Unit 1: Lower Freeport (D) coal. Same as coal described at 64-3 (p. 2); see 64-3 for analyses.				

STATION NO. 64-4 (page 2)		LAT °N. 41°12'16"		COUNTY Jefferson		WEATHERING		JOINTING													
SAMPLE NO.(S)		LONG °W. 78°50'16"		TWP. Washington		COMMENTS															
PANY Minns Coal Co.		GEOLOGIST tmb		15' QUADRANGLE DuBois																	
Minns		PERMIT 138-1		DATE 8-11-66		7 1/2' QUADRANGLE Falls Creek															
L(S) REPORTED		Lower Freeport (D).																			
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S						
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN. DANCE															
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"									
32'																					
	Soll	2' - 3'																			
8' 0"	Cl sh			G	5Y 5/2														Fissile; beds 1/4" - 3"; platy; mica, r; carbonaceous material; silty and sandy laminae, r.		
0' 2"	Cl sh			S	N1														Fissile; beds -1/32" - 1/8"; fusainoid.		
0' 3"	Cl sh			S	N4														Fissile; beds -1/32" - 1/4"; chippy; excellent ferns, c.		
0' 2"	Cl sh			S	N1 - N3														Fissile; beds -1/32" - 1/8".		
1' 6"	Ss			S	5Y 6/5														Beds 1/2" - 1'; mica, a; rootlets at top, r; silt to very fine-grained, clay matrix; carbonaceous material, c; Cs at top.		
6' 0"	Cl sh				N3														Fissile; beds 1/32" - 1/2"; platy, chippy; mica.		
	Sts				5Y 7/2														Fissile; beds 1/32" - 1/2"; platy, chippy; rootlets, stems.		
	Ss			S	10YR 5/4														Fissile; beds 1/2" - 3'; mica, a; very fine-grained (almost a Sts), clay matrix, dark minerals. Unit 4: Interbedded.		
6' 0"	Ss			S	N6														Beds 3" - 1'; mica, a; medium-grained, good sorting, clay matrix, carbonaceous material. Four Cl sh beds, 3" thick, spaced 1' apart in upper portion. Thin beds Sts, N3, r.		
6' 0"	Cl sh			S	N3														Fissile; beds 1/32" - 1/4"; chippy; has a few thin Ss beds near top.		

SITE/STATION NO. 64-5 (page 1)			LAT °N. 41° 12' 14"			COUNTY Jefferson			WEATHERING			JOINTING											
COAL SAMPLE NO.(S) 64-C-4			LONG °W. 78° 50' 14"			TWP. Washington			COMMENTS *Survey designation: Upper Freeport (E).														
COMPANY Minns Coal Co.			GEOLOGIST tmb			15' QUADRANGLE DuBois																	
MINE Minns		PERMIT 138-1		DATE 8-17-66		7 1/2' QUADRANGLE Falls Creek																	
COAL(S) REPORTED Mahoning																							
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
		Coal	0' 2"	24-26		N1	+					+	+	MB MD	1.6	31.0	62.5	4.9	1.07		13790	Knife-edge pyrite partings, r; peacock lustre.	
		Clay	0' 1/8"																				Parting, very hard; carbonaceous.
		Coal	1' 2"	10-24		N1	+					+	+	B- MB	1.6	30.9	62.7	4.8	1.04		13920	Knife-edge pyrite partings, r.	
		Fusain	0' 1/4"																				Parting.
2	2' 2"	Coal	0' 10"	0-10	G	N1	+					+	+	+	MB	1.7 1.6	27.6 29.6	63.7 63.1	7.0 5.7	0.58 0.87		13480 13741	Peacock lustre, r. Seam average of 64-C-4, Upper Freeport (E) coal.
1	2'+	Uc			S	N4																	Solid; rootlets; extremely friable.

STATION NO. 64-5 (page 2)		LAT °N. 41°12'14"		COUNTY Jefferson		WEATHERING		JOINTING												
SAMPLE NO.(S) 64-C-4		LONG °W. 78°50'14"		TWP. Washington		COMMENTS *Survey designation: Upper Freeport (E).														
PANY Minns Coal Co.		GEOLOGIST tmb		15' QUADRANGLE DuBois																
Minns		PERMIT 138-1		DATE 8-17-66		7 1/2' QUADRANGLE Falls Creek														
L(S) REPORTED Mahoning																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON														
						% ABUN- DANCE			THICK- NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"		1/32" - 1/8"	< 1/32"	MOISTURE	VOLATILE				
75'																				
10'+	Sts, Ss			C	10Y 5/2													Fissile; beds 1/2" - 3"; mica, c; very fine-grained, clay matrix. Interbedded.		
4'+	cover																	Covered interval.		
3'+	Cs			C	10R 4/2													Solid; rubbly; friable.		
1' 6"	Ls			S														Clayey; micritic; semi-nodular; Fe-stain, a.		
6' 0"	Cs			S	5Y 7/2, N6													To 5Y 6/1, to N6, to mottled 5R 3/4 and 5Y 4/4; solid; rubbly; rootlets, r; friable.		
2' 0"	Ss			G	5Y 6/4													Beds 1' - 2'; fine-grained, clay matrix, clay galls.		
7' 0"	cover																	Covered interval; probably a Ss, as Unit 6.		
12'+	Ss & Sts			C	5Y 5/2, 5Y 6/6													Beds 3" - 4"; solid; mica, c; very fine-grained, good to excellent sorting, clay matrix, good porosity. Interbedded.		
14' 6"	Cl sh			U	N5													Fissile; beds 1/32" - 1'; platy, chippy, blocky, hackly; hard silty beds with siderite cement, r; conchostracans, r; coarser, thicker bedded, silty and N6 to 10Y 5/2 upward; at top: 2' 6" of Sh, 5Y 4/10, platy.		
10' 4"	Cl sh			S	N3 - N5													Fissile; beds 1/32" - 1/2"; platy, chippy; siderite laminae to 1/2" in middle portion, a; <u>Annularia</u> sp. and <u>Neuropteris</u> sp., megaspores, r; conchostracans, r.		
0' 1"	Cl sh			G	N2													Fissile; beds -1/32" - 1/8"; coaly; dense; megaspores, c; grades upward from coal to Cl sh.		

SITE/STATION NO.		64-6 (page 1)		LAT °N.		41°05'10"		COUNTY		Jefferson		WEATHERING		fresh		JOINTING				
COAL SAMPLE NO(S)				LONG °W.		78°56'15"		TWP.		Winslow		COMMENTS		Fairly uniform highwall laterally.						
COMPANY		R. D. Baughman Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		DuBois										
MINE Deemer-0'Donne1		PERMIT 151-19		DATE		6-30-66		7 1/2' QUADRANGLE		Reynoldsville										
COAL(S) REPORTED		Lower Kittanning (B).																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE		THICK- NESS											
							> 60	30 - 60 *	15 - 30	0 - 15	> 1/4 "	1/8" - 1/4 "								
		Coal	0' 5 1/2"	16 1/2-22	S	N1											Blocky fracture.			
		Coal	0' 6 1/2"	10-16 1/2	S	N1											Irregular fracture; partings, r.			
		Coal	0' 7"	3-10	S	N1											Several discontinuous fusain partings. 0"-1/4" fusain-silt parting, N1, at top.			
2	1' 10"	Coal	0' 3"	0-3	S	N1					MB						Blocky fracture; 1/8" (to 1 1/2" locally) Cs parting N1, hard, at top. Unit 2: Lower Kittanning (B) coal.			
1	1' 0"	Uc			S	N7											Frag's. -1/2"; hackly; upper 4" is silty, and N3.			

/STATION NO. 64-6 (page 2)		LAT °N. 41°05'10"		COUNTY Jefferson		WEATHERING fresh		JOINTING											
SAMPLE NO.(S)		LONG °W. 78°56'15"		TWP. Winslow		COMMENTS Fairly uniform highwall laterally.													
PANY R. D. Baughman Coal Co.		GEOLOGIST wee		15' QUADRANGLE DuBois															
Deemer-O'Donnel		PERMIT 151-19		DATE 6-30-66		7 1/2' QUADRANGLE Reynoldsville													
L(S) REPORTED Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S				
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						A N T H R A X Y L O N			ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN- DANCE													
						> 60	30 - 60	15 - 30							0 - 15				
46'																			
	Ss																	"Float" materials.	
16' 0"	St sh	6' 0"			N2													Fissile; beds 1/32"-1/4"; chippy; pectens or brachiopods sampled; brittle.	
	St sh	5' 0"		G	N2													Clayey; fissile; beds 1/8" - 1/4"; hackly; siderite nodules; mica l, c.	
	Cl sh	5' 0"		G	N1													Silty; fissile; beds 1/8" - 1/4"; hackly; siderite nodules.	
1' 0"	Sts	0' 6"		G	N1 - N2													Clayey; carbonaceous; frag's. 1/2" +.	
	Coal	0' 6"	0-6	G	N1													Shaly.	
0' 6"	Coal		0-6	G	N1						B							Several partings.	
25' 3"	Uc	1' 0"		S	N4													Silty; frag's. -1/2"; plt. frgs., rootlets, c.	
	St sh	4' 0"		G	N7													Clayey; fissile; beds 1/4"-3"; chippy, slabby; mica l, c; plt. frgs., rootlets, c; sand laminae, r; "lumpy."	
	Sts																	Beds 2', solid; very fine-grained, clay matrix.	
	Ss	2' 0"		S	N7													Fissile; beds 1/4" - 3"; chippy, slabby; very fine-grained, clay matrix.	
	Ss	3' 0"		G	N6														
	St sh	4' 0"		G	N5													Clayey; fissile; beds 1/8" - 1/4"; chippy.	
	Cl sh	4' 0"		G	N4													Silty; fissile; beds 1/8" - 1/4"; chippy.	
	Cs	7' 0"		G	N5													Silty; fissile; beds 1/2"-1'; blocky, rubbly; siderite nodules; mica l, c; plt. frgs., r; more silty upward.	
	Cl sh	0' 3"		G	Lam. N4 - N5													Subfissile; beds -1/32"-1/8"; frag's. -1/2"-1/2" +; plt. frgs., leaves, a.	

SITE/STATION NO.		64-7		LAT °N.		41°08'22"		COUNTY		Jefferson		WEATHERING		fresh		JOINTING		N70°W.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
COAL SAMPLE NO.(S)				LONG °W.				78°49'32"				TWP.				Washington				COMMENTS				Unit 3 has large scale cross-bedding, dips north channel axis E-W.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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MINE				PERMIT				154-3C				DATE				6-30-66				7 1/2' QUADRANGLE				Falls Creek																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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SITE/STATION NO.	64-9	LAT °N.	41°14'07"	COUNTY	Jefferson	WEATHERING	JOINTING
COAL SAMPLE NO.(S)		LONG °W.	78°48'52"	TWP	Snyder	COMMENTS	Units 5 - 7 inaccessible.
COMPANY	Boyer Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	DuBois		
MINE	Boyer strip	PERMIT	269-3	DATE	8-16-66	7 1/2' QUADRANGLE	Falls Creek
COAL(S) REPORTED	Upper Freeport (E).						

S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES					C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE				THICK - NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"		< 1/32"										
T	31'																								
7	8' ₊	Sts				5Y 5/4														Clayey, slightly sandy; fissile; beds 1/4" - 1/2"; plat					
6	5' ₊	C1 sh			G	N2 - N3														Fissile; beds 1/32"-1/2"; platy, chippy, hackly; carbonaceous material, c. Inaccessible (partially covered).					
5	15' ₊	C1 sh			G	N3 - N4														Fissile; beds 1/32"-1/2"; platy, chippy, hackly, siderite laminae; leaves, r; grades laterally to a non-fissile C1 (Uc?) in pods; conchostracans 3' from bottom, r.					
4	0' 9"	C1 sh			G	N1 - N2														Fissile; beds 1/32"-1/4"; chippy; carbonaceous material, a; spores, c; fusain, r.					
3	0' 3/4"	Sh			G	N1														Fissile; beds -1/32" - 1/8"; carbonaceous material, fusain; spores at bottom, a.					
2	2' 8"	Coal	0' 9"	23-32		N1	+					+	+	MD											
		Fusain	1" - 1/2"									+	+	MB						Parting.					
		Coal	1' 1"	9 1/2 - 22 1/2		N1	+					+	+	MB						Parting to 1/2" thick.					
		Fusain	0' 1/2"																	Clay-fusain and knife-edge pyrite partings, r. Unit 2: Upper Freeport (E) coal.					
1	0' 6"+	Uc			S	N4														Frag's. -1/2"; rootlets, a; extremely friable.					

STATION NO. 64-10		LAT °N. 41°14'16"		COUNTY Jefferson	WEATHERING fresh	JOINTING
SAMPLE NO.(S) 64-C-5		LONG °W. 78°49'23"		TWP Snyder	COMMENTS Roll of coal and highwall - bearing N70°W, 90° dip.	
PANY Boyer Coal Co.		GEOLOGIST tmb	15' QUADRANGLE DuBois			
Boyer strip		PERMIT 269-3	DATE 8-16-66		7 1/2' QUADRANGLE Falls Creek	
(S) REPORTED		Upper Freeport (E)? coal.				

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S					
SS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							ATTRITUS LUSTER	PROXIMATE (%)					SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON				THICK- NESS				MOISTURE	VOLATILE	FIXED CARBON	ASH						
						% ABUN- DANCE	> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						1/32" - 1/8"					< 1/32"
48'																							
	cover																						
20' 0"	Sts			G	5Y 5/2 - 5Y 5/4																		Very clayey; fissile; beds 1/4" - 3"; platy; rubbly; slightly coarser upward.
4' 0"	Cl sh			G	N3 - N4																		Fissile; subfissile; beds 1/8" - 1/2"; platy, chippy, hackly; flat siderite nodules to 1" thick; very hard, (siderite cement?). Interlaminated with silty Cl sh.
10' 6"	Cl sh			G	N5																		Silty; fissile; beds 1/32" - 1/4"; chippy.
10' 0"	Cl sh			G	N2																		Fissile, beds 1/32" - 1/2"; splintery, platy, chippy, hackly. Corresponds to Units 3 - 5 (Site 64-9).
3' 3"	Coal	0' 5"	34-39		N1	+				++			MD	1.5	30.0	58.7	10.0	0.78		13000			Knife-edge Cl partings, especially near top.
	Cl	0' 1/8"																					Parting.
	Coal	1' 0"	22-34		N1	+				++			MB	1.3	32.9	62.5	3.3	0.68		14090			Peacock lustre, r.
	Fusain	0' 1/2"																					Parting.
	Coal	0' 10"	11 1/2-21 1/2		N1	+				++			MB	1.6	28.3	61.3	8.8	0.66		13160			Peacock lustre, r; scattered 1/8" thick fusain partings; thick vitrain bands, r.
	Fusain	0' 1/2"																					Parting.
	Coal	0' 11"		S	N1	+				++			MD	1.6 1.5	27.3 29.7	56.8 60.0	14.3 8.8	1.08 0.80		13400 13502			Thin fusain-pyrite partings, c; thick vitrain bands, r. Seam average of 64-C-5, Upper Freeport (E)? coal.
few "+	Uc			S	N3 - N4																		Solid; rootlets.

SITE/STATION NO.		64-12		LAT °N.		41°11'56"		COUNTY		Jefferson		WEATHERING		JOINTING S25°E; S15°W.											
COAL SAMPLE NO(S)				LONG °W.		78°47'35"		TWP.		Washington		COMMENTS													
COMPANY		Brubaker Bros. Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		DuBois															
MINE		Brubaker # 2		PERMIT		53-2		DATE		6-28-67		7½' QUADRANGLE		Falls Creek											
COAL(S) REPORTED		Upper Kittanning (C').																							
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES				C O M M E N T S									
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON																		
							% ABUN - DANCE																		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"											
T	26'																								
4	15' 0"	Cs	10'+			5Y 8/1																			Fissile, subfissile; beds 1/4"-1"; solid frag's. 1/2"; flaggy, chippy, slabby, hackly, rubbly; plt. frgs., c; becomes silty upward.
		Cs	5' 0"		G	5GY 6/1																		Silty; fissile; beds 1/2"-3"; slabby, hackly upward; plt. frgs., a.	
3	2' 0"	Ss			S	N6																			Fissile; beds 3"-6"; slabby; mica 1 - 2, a; plt. frgs., r; very fine-grained, good sorting, clay matrix, silica cement, dark minerals, Fe-stain.
2	7' 0"	Cl sh			S	N3 - N4																			Fissile; beds 1/8" - 1/2"; chippy, hackly; plt. frgs., leaves.
1	1' 9½"	Coal	0' 4"	17½-21½		N1																			Bony. Upper Kittanning (C') coal. Unit 1: Extremely weathered.
		Coal	1' 5½"	0-17½		N1																			

STATION NO.	64-13	LAT °N.	41°13'28"	COUNTY	Jefferson	WEATHERING	extreme	JOINTING	S20°E, N70°E.
SAMPLE NO.(S)		LONG °W.	78°47'05"	TWP.	Snyder	COMMENTS			
PANY	Dwight Calhoun Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	DuBois				
Dwight Calhoun	PERMIT 262-1	DATE	6-28-67	7 1/2' QUADRANGLE	Falls Creek				
L(S) REPORTED	Upper Freeport (E).								

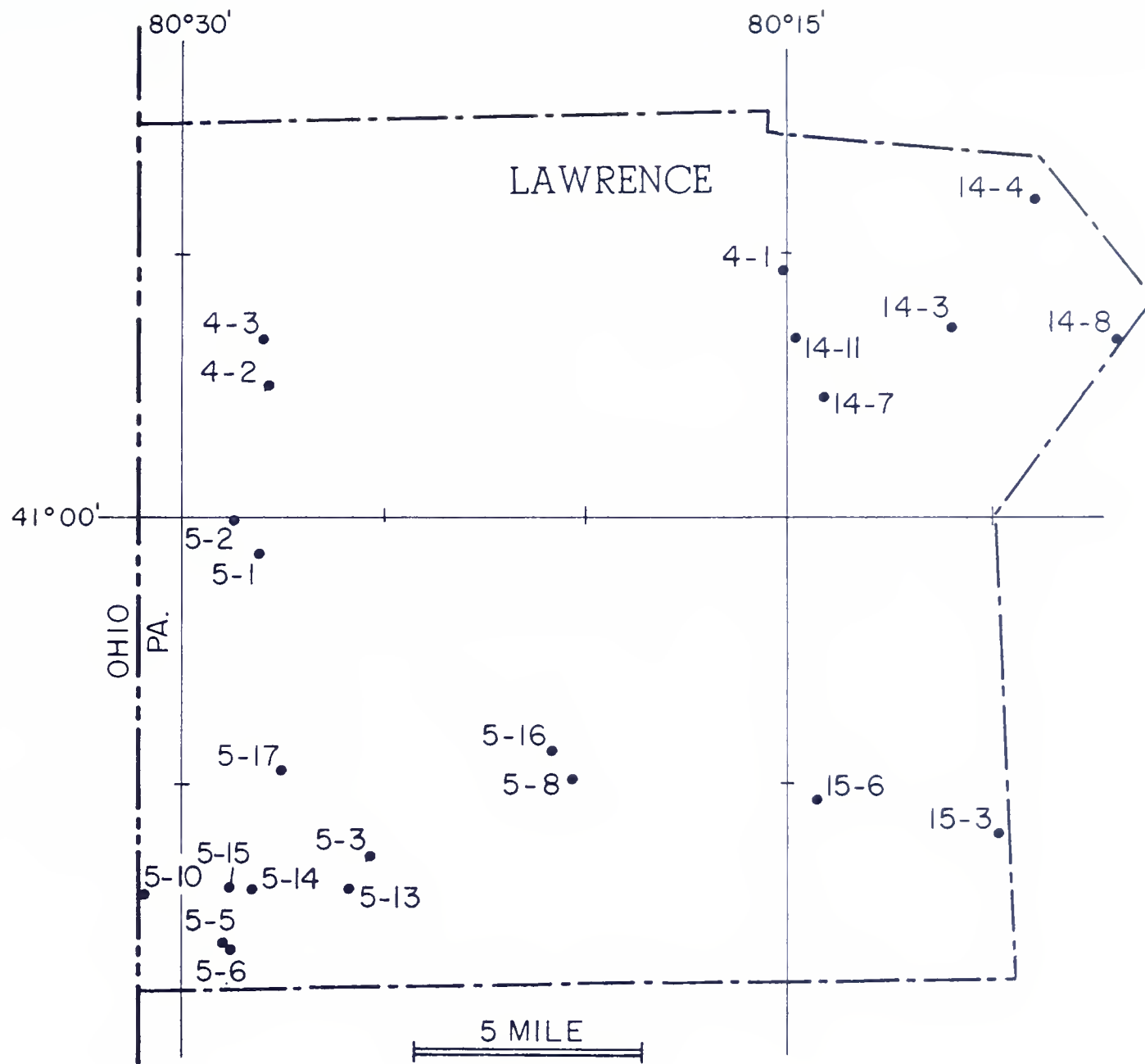
S T R A T I G R A P H I C D A T A														COAL CHEMICAL ANALYSES					C O M M E N T S					
SS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
						ANTHRAXYLON				THICK -														
						% ABUN -				NESS														
						DANCE																		
INTERVAL (TOTAL)						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"		MOISTURE	VOLATILE	FIXED CARBON	ASH						
13'																								
10'+	Cl sh				5Y 4/1																			Fissile; beds 1/8" - 1/4"; splintery, chippy; weathers to very fine chips. Uniform lithology.
2' 7 1/2"	Coal	1' 2"	17 1/2-31 1/2		N1																			Upper 5" - 6" is shaly.
				S																				Parting, persistent.
	Coal	1' 5 1/2"	0-17 1/2	S	N1																			Unit 2: Upper Freeport (E) coal.
	Uc																							

[illegible]

SITE NO. 65-2

SITE/STATION NO. 65-6	LAT °N. 40°59'39"	COUNTY Jefferson	WEATHERING moderate	JOINTING: (coal) N61°-66°W, N36°E.
COAL SAMPLE NO.(S) 65-C-4	LONG °W. 78°59'09"	TWP. McCalmont	COMMENTS	: (shale) N30°E, N65°W, N77°E.
COMPANY Glenn Coal Co.	GEOLOGIST gbg	15' QUADRANGLE Punxsutawney		: (shale) N35°W.
MINE Glenn #11	PERMIT 343-11	DATE 8-26-68	7 1/2' QUADRANGLE	Unit 4 (Ss) locally cuts out unit 3, and upper portion of unit 2.
COAL(S) REPORTED Upper Freeport (E)				

COAL(S) REPORTED		UPPER FREEPORT (E)		S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES								C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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SITE/STATION NO.		4-1	LAT °N.		41°04'38"	COUNTY		Lawrence	WEATHERING		fresh	JOINTING	
COAL SAMPLE NO.(S)			LONG °W.		80°15'02"	TWP.		Washington	COMMENTS				Vanport limestone reported below coal, thereby
COMPANY			Ambrosia Coal & Constr. Co.		GEOLOGIST		wee	15' QUADRANGLE		Neshannock		making Unit 2 Lower Kittanning (B) coal.	
MINE		Hillsville	PERMIT		103-3A2	DATE		5-25-66	7 1/2' QUADRANGLE		New Castle		
COAL(S) REPORTED			Clarion coal.										

GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				BRITISH THERMAL UNITS	C O M M E N T S			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN- DANCE			THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8"- 1/4"									
T	25'																				
4	10' 0"	cover															Glacial material.				
3	12' 1"	Ss	6' 0"		U	N7											Fissile; beds 1" - 4"; slabby; mica 2, c; plt. frgs. silt laminae in lower 3'.				
		St sh	6' 0"		G	N5 - 5Y 6/1											Beds 1/4" - 1/8"; chippy; plt. frgs., more sandy upward to sand beds and laminae to 1".				
		St sh	0' 1"		S	N1											Fissile; beds 1/32" - 1/8"; platy; hard and brittle.				
2	2' 5 1/2"	Coal	0' 7 1/2"	22-29 1/2	S	N1							D				Partings, r.				
		Coal	0' 8"	14-22	G	N1							B				Blocky; partings, r.				
		Sts	0' 1"		S	N1											Parting to 1"; partings, r.				
		Coal	1' 1"	0-13	S	N1					+	+	+	+	B		Unit 2: Lower Kittanning (B) ? coal.				
1		Uc			S	N7											Slightly silty; frag's. -1/2".				

SITE/STATION NO.		4-2 (page 2)		LAT °N.		41°02'28"		COUNTY		Lawrence		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
COAL SAMPLE NO.(S)		4-C-1		LONG °W.		80°26'50"		TWP.		Mahoning		COMMENTS				Units 10 - 14 inaccessible.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
COMPANY		C. D. Ambrosia Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Neshannock																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
MINE		Marce		PERMIT		103-5		DATE		8-2-67		7 1/2' QUADRANGLE		Edinburg																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
COAL(S) REPORTED				Brookville.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		THICK- NESS	MOISTURE	VOLATILE	FIXED CARBON		ASH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

STATION NO. 4-3		LAT °N. 41°03'24"		COUNTY Lawrence		WEATHERING fresh		JOINTING														
SAMPLE NO(S) 4-C-2		LONG °W. 80°27'57"		TWP. Mahoning		COMMENTS																
Leb Mining Co.		GEOLOGIST adg		15' QUADRANGLE Neshannock																		
Carol		PERMIT 293-1C		DATE 7-31-68		7 1/2' QUADRANGLE Edinburg																
AS) REPORTED Brookville																						
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE																
						THICK - NESS																
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
1' - 38'																			Coals analyzed M/7-25-69			
	cover																		Soil.			
14'	Cl sh				5Y 5/1														Subfissile; platy, hackly; contains discontinuous lenses of oolitic siderite or diaspora clay (sampled); beds 1/8"-1/2".			
1' 0"	cover																		Covered interval.			
1' 6"	Sh				N2														Fissile; platy; thin coaly streaks; beds 1/32"-1/8".			
1' 6"	Uc			G	5Y 4/1														Stigmara, c; frag's. + 1/2".			
1' - 2'	Ss			U	N7														Mica 2, r; very fine- to fine-grained; clay matrix, a; solid.			
1' 0"	Ss Cl sh			G	N7 N4														Unit 3: Interbedded; subfissile; rubbly; beds 1/2" - 3".			
1' 6"	lss st			G	N3/N4														Fissile; platy; siderite nodules, r; mica l, c - a; plt. frgs., a; very fine-grained; beds 1/4"-1/2".			
1' 7 1/2"	Coal	1' 2 1/2"	17-31 1/2	S	N1	+		+		MB	1.8	41.0	49.3	7.9	3.62	13284			Pyrite.			
	Sh	0' 2"		S															Parting, tough.			
	Coal	1' 3"	0-15	S	N1		+		+	MD	1.7	37.5	47.9	12.9	2.46	12219			Bony.			
												1.7	39.2	48.6	10.4	3.03	12742			Seam average of 4-C-2, Brookville coal.		

SITE/STATION NO.		5-1		LAT °N.		40°59'28"		COUNTY		Lawrence		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)		5-C-1		LONG °W.		80°28'00"		TWP.		North Beaver		COMMENTS				35' interval between Lower Kittanning (B) coal					
COMPANY				Ambrosia Coal & Constr. Co.				GEOLOGIST		adg		15' QUADRANGLE		New Castle							
MINE		Hillsville		PERMIT		103-4		DATE		7-13-66		7 1/2' QUADRANGLE		Bessemer							
COAL(S) REPORTED				Lower Kittanning (B).																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	27' -30'																				
8	5' 0"	Ss				N6											Beds 3" - 2'; fine-grained; clay matrix; Fe, r.				
7	3' 0"	St sh & Ss			S												Interbedded. Beds 1/4" - 3".				
6	0' - 3'	Ss			S	N7											Beds 1/2" - 1'; mica, r; very fine-grained; clay mat.				
5	7' 6"	St sh			U	N6											Beds 1/4" - 1/2"; hackly; plt. frgs., a.				
4	1' 0"	St sh			G	N6											Beds 1/2" - 3"; mica, r.				
3	8' 6"	Cl sh			S	N5											Beds 1/4" - 1/2"; <u>Lingula</u> sp. at bottom.				
2	2' 1"	Coal		0-25	S	N1	++		++	D	2.9	32.4	56.6	8.1	3.10	12670	Prominent jointing; pyrite, r. <u>5-C-1</u> , Lower Kittanning (B) coal.				
1		Uc			S	N6															

STATION NO.	5-2	LAT °N.	40°59'51"	COUNTY	Lawrence	WEATHERING	JOINTING
SAMPLE NO.(S)	5-C-2	LONG °W.	80°28'36"	TWP.	North Beaver	COMMENTS	Extensive slumping has cut out some of the coal
COMPANY	Ambrosia Coal & Constr. Co.	GEOLOGIST	adg	15' QUADRANGLE	New Castle	which is squeezed into lower units of highwall. 35'+ interval	
Hillsville	PERMIT 103-4	DATE	7-13-66	7 1/2' QUADRANGLE	Bessemer	between Middle Kittanning (C) coal (unit 2, Site 5-2) and Lower Kittanning (B) coal (unit 2, Site 5-1).	
COL(S) REPORTED	Middle Kittanning (C)?						

S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES					C O M M E N T S
GROSS UNIT	L I T H O L O G Y	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON							MOISTURE	VOLATILE	FIXED CARBON	ASH				
						% ABUN - DANCE		THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
Interval (TOTAL)																				
31'																				
30' 0"																			Cl sh and thin Ss is interbedded with Ss and Sts; plt. frgs., a.	
0' 7"	Coal		0-7	S	N1	+	+			+	D	2.8	30.7	59.3	7.2	1.69	12920	5-C-2, Middle Kittanning (C)? coal.		
	Uc																			

SITE/STATION NO.		5-3		LAT °N.		40°53'34"		COUNTY		Lawrence		WEATHERING		JOINTING								
COAL SAMPLE NO(S)		5-C-3		LONG °W.		80°25'16"		TWP.		Little Beaver		COMMENTS				Reed-Walker-Beatty-Walker-McHultis mine						
COMPANY				R. A. Veon, Inc.				GEOLOGIST		adg		15' QUADRANGLE		New Castle								
MINE		see comments		PERMIT		40-5A		DATE		7-13-66		7 1/2' QUADRANGLE		Bessemer								
COAL(S) REPORTED				Middle Kittanning (C).																		
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						1/32" - 1/8"				
T	22'																					
3	20'	Ss				N7 - N8													Beds 1/2" - 2'; mica, r; fine-grained, clay matrix. Unit 3: Few very thin-bedded discontinuous Ss and Sh units to 3' with carbonaceous material near top.			
2	2' 0"	Coal	0' 9"	15-24	S	N1	+				+	+	D	1.6	34.2	53.8	10.5	5.62	12750	Pyrite at top, a.		
		Sh	0' 1 1/2"																	Parting.		
		Coal	1' 2 1/2"	0-14 1/2		N1	+				+	+	D	2.0 1.9	33.6 33.8	57.3 56.0	6.8 8.2	4.31 4.81	13360 13126	Pyrite partings. Seam average of 5-C-3, Middle Kittanning (C) coal.		
1	?	Uc			S																	

TATION NO. 5-5		LAT °N. 40°51'55"		COUNTY Lawrence		WEATHERING fresh		JOINTING	
SAMPLE NO.(S)		LONG °W. 80°28'57"		TWP. Little Beaver		COMMENTS U.S.G.S. Bulletin 1143-B indicated coal to be Middle			
NY R. A. Veon, Inc.		GEOLOGIST wee		15' QUADRANGLE New Castle		Kittanning (C), as is also indicated in Penn-			
Veon # 16		PERMIT 40-2A		DATE 5-26-66		7 1/2' QUADRANGLE New Galilee		sylvania Geologic Survey Atlas A5.	
REPORTED		Upper Kittanning (C').							

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S					
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON							MOISTURE	VOLATILE	FIXED CARBON	ASH				
						% ABUN - DANCE		THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
6'																				
5' 0"	Ss				N7														Beds 2" - 2' (mostly 3" - 1"); large-scale cross-bedding (lenses, wedges) dip N40°E; mica 1 - 3, a; branches, r; very fine- to fine-grained, clay matrix, dark minerals.	
- 10'	Sts	1 1/2' - 2 1/2'		U	N4														Clayey; beds 1/32" - 1/8"; chippy; 2" siderite nodules in bands every 2" - 6"; plt. frgs., r.	
	St sh	6' 6"		G	N3														Fissile; beds -1/32"; papery; 2" siderite nodules in bands every 2" - 6"; plt. frgs., r.	
0' 2"	Sh			S	N1														Carbonaceous; fissile; beds -1/32"; papery; extremely weathered. "Ragged" disconformity.	
2' 8 1/4"	Coal	0' 5"	27 1/4-32 1/4	S	N1						D								Fine cubic fracture; very thin carbonaceous Sh partings.	
	Sh	0' 1/4"		S	N1														Carbonaceous, persistent parting; beds 1/8" - 1/4"; chippy.	
	Coal	1' 5"	10-27	S	N1						B- MB								Blocky; thin fusain-shale partings to 3", c.	
	Coal	0' 10"	0-10	S	N1						B- MB								Irregular fracture; discontinuous partings, r; thin parting at top. Unit 3: Middle Kittanning (C)? coal.	
Note:																			For preceding stratigraphy (Units 1 - 2), see Site 5-6 (Mine permit 40-2A).	

SITE/STATION NO.	5-6	LAT °N.	40°51'53"	COUNTY	Lawrence	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	80°28'52"	TWP.	Little Beaver	COMMENTS	U.S.G.S. Bulletin 1143-B indicated coal to be Lower Kittanning (B), as is also indicated in Pennsylvania Geologic Survey Atlas A5.		
COMPANY	R. A. Veon, Inc.	GEOLOGIST	wee	15' QUADRANGLE	New Castle				
MINE	Veon # 16	PERMIT	40-2A	DATE	5-26-66	7 1/2' QUADRANGLE	New Galilee		
COAL(S) REPORTED	Middle Kittanning (C).								

S T R A T I G R A P H I C D A T A													C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
							% ABUN - DANCE	THICK - NESS												
							> 60	30 - 60							15 - 30	0 - 15				
	Note:																	For total interval and continuing stratigraphy (Units 3 - 6), see Site 5-5 (Mine permit 40-2A).		
2	30' 0"	Sts	3' 0"		S	N7												Frag's. 1/2"+; rubbly; <u>Stigmara</u> , a; a silty underclay.		
		Ss	13' 0"		G	N7												Fissile; beds 6" - 1'; slabby; branches, plt. frgs. leaves, a; hard, dense; thin clay laminae, r.		
		lss st	6' 0"		G													Fissile; beds 1/2" - 3"; slabby; sand (N7), silt (N4).		
		Sts	5' 0"		G	N4												Fissile; beds 1/2" - 3"; slabby.		
		Cs	3' 0"		G	N2												Silty; fissile; beds 1/2" - 3"; rubbly; plt. frgs., leaves, c.		
1		Coal			S	N1												Mostly under water. Lower Kittanning (B)? coal.		

STATION NO. 5-8 (page 1)	LAT °N. 40°55'01"	COUNTY Lawrence	WEATHERING weathered	JOINTING Lower strip: N65°W, N20°E
LOCAL SAMPLE NO.(S)	LONG °W. 80°20'19"	TWP. Shenango	COMMENTS	: Upper strip: N50°E, N30°W.
COMPANY Medusa Cement Co.	GEOLOGIST wee	15' QUADRANGLE New Castle	Survey identification: Possibly Lower (D) and Upper (E) Freeport. Units 15 - 17 are a channel filling.	
Loc. Wampum	PERMIT 360-1	DATE 5-27-66		
LOCAL(S) REPORTED Not reported.		7 1/2' QUADRANGLE New Castle So.		

STRATIGRAPHIC DATA						COAL CHEMICAL ANALYSES										COMMENTS					
GROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
						% ABUN- DANCE															
						> 60	30 - 60	15 - 30	0 - 15						> 1/4"	1/8" - 1/4"	1/32" - 1/8"				
83'																					
2' 2½"	Coal	0' 6"	20½ - 26½	S	N1									MD						Blocky; partings, r.	
	Fusain	0' ½"		S	N1															Parting, persistent.	
	Coal	0' 5"	15-20	S	N1									B						Blocky; thin partings, r.	
	Coal	0' 5"	10-15	S	N1									MB						Fine cubic fracture; several partings.	
														MD							
	Coal	0' 5"	5-10	S	N1									D							Blocky. Thin persistent fusain-shale partings at top.
	Coal	0' 5"	0-5	S	N1									MD -D							Irregular fracture; tough. Thin persistent carbonaceous sh parting at top. Unit 2: Lower Freeport (D) ? coal.
	Uc			S																	

SITE/STATION NO.	5-8 (page 2)	LAT °N.	40°55'01"	COUNTY	Lawrence	WEATHERING	weathered	JOINTING:	Lower strip: N65°W, N20°E
COAL SAMPLE NO.(S)		LONG °W.	80°20'19"	TWP.	Shenango	COMMENTS			Upper strip: N50°E, N30°E
COMPANY	Medusa Cement Co.	GEOLOGIST	wee	15' QUADRANGLE	New Castle	Survey identification:	Possibly Lower (D) and Upper (E) Fr		
MINE	Wampum	PERMIT	360-1	DATE	5-27-66	7 1/2' QUADRANGLE	New Castle So.	port. Units 15 - 17 are a channel filling.	
COAL(S) REPORTED	Not reported.								

S T R A T I G R A P H I C D A T A																	COAL CHEMICAL ANALYSES					C O M M E N T S
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"
12	0' 6"	St sh Cl sh	0' 3" 0' 3"		S S	N2 N2												Fissile; beds -1/32"; papery; mica l, c; brittle. Non-silty; fissile; beds 1/32" - 1/8"; chippy; un clay-like slickensides.				
11	1' 2"	Ss			S	N5												Silty; fissile; 1" beds; slabby; mica l - 2, c; s to very fine-grained, silica cement, dark miner				
10	0' 7"	Cl sh			S	N3												Silty; fissile; beds 1/32" - 1/8"; papery, platy; mica l, c; plt. frgs., r.				
9	0" - 6"	Cl			S	N7												Non-silty; unconsolidated, possibly a weathering				
8	0' - 2'	Ss			S	N7												Solid; mica l - 3, c; medium-grained, clay matrix				
7	14' - 17'	Ss	4' - 7'		S	5Y 6/1												Silty; fissile; beds 1/2" - 3"; slabby; mica l - 2, very fine-grained.				
		lss st	5' 0"		G	N5, N7											Clayey; fissile; beds 1/2" - 3"; blocky, rubbly; mica l - 2, c; sand (N7), silt (N5).					
		St sh	5' 0"		G	N5											Fissile; beds -1/32"; chippy; mica l - 2, c; very grained Ss laminae, r. Unit 7: Upper contact may be unconformable.					
6	10' - 15'	St sh	3' - 8'		S	N2												Clayey; fissile; beds 1/8" - 1/4"; hackly; siderite nodules to 1", c; mica l, c; plt. frgs., leaves				
		Cl sh	7' 0"		G	N2												Silty; fissile; beds 1/8"-1/4"; hackly; siderite nodules to 1", c; mica l, c; plt. frgs., leaves, Unit 6: Bedding truncates against Unit 5.				
5	4" - 7"	Coal			S	N1												Shaly; blocky to granular; pyrite nodules and part c. Lower Freeport (D) rider coal.				
4	2' 6" - 7' 0"	Cs - Cl sh			S	N4												Very silty; fissile; beds 1/4" - 3"; hackly, rubbly mica l, c; plt. frgs., c.				
3	0' 3"	St sh			S	N1												Carbonaceous; fissile; plt. frgs., leaves, c.				

SITE/STATION NO. 5-8 (page 3)	LAT °N. 40°55'01"	COUNTY Lawrence	WEATHERING weathered	JOINTING: Lower strip: N65°W, N20°E.
COAL SAMPLE NO.(S)	LONG °W. 80°20'19"	TWP. Shenango	COMMENTS	: Upper strip: N50°E, N30°W.
COMPANY Medusa Cement Co.	GEOLOGIST wee	15' QUADRANGLE New Castle	Survey identification: Possibly Lower (D) and Upper (E) Freeport. Units 15 - 17 are a channel filling.	
MINE Wampum	PERMIT 360-1	DATE 5-27-66	7 1/2' QUADRANGLE New Castle So.	
COAL(S) REPORTED	Not reported.			

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
0	20' 0"	Ss				N7												Fissile; flat beds 2' - 5'; mica l - 3, c; r; medium- to coarse-grained, clay matrix, dark minerals. Cl sh lenses to 1', r; coal lenses to 1', r.			
9	1' - 2'	Cs			U	N3 - N5												Non-silty; frag's. 1/2"±; hackly, rubbly; plt. frgs., leaves, c.			
8	2' 4"	Coal	0' 1 1/2"	26 1/2-28	S	N1					D							Bony; irregular fracture; tough.			
		Coal	0' 4"	22 1/2-26 1/2	S	N1					MB							Blocky; partings, r.			
		Coal	1' 10 1/2"	0-22 1/2	S	N1												Irregular fracture; tough; thin pyrite, fusain, and Sh partings, c. Unit 18: Thickness varies abruptly due to compaction and slippage of overlying Ss. Upper Freeport (E) coal.			
7	6' 0"	Ss				N7												Clayey; one bed 6'; mica l, c; medium-grained, clay matrix. Relation to other units uncertain, but is part of a channel filling.			
6	0' - 2'	Cl																Non-silty, with coaly material at top contact. In place? Part of a channel filling.			
5	35' 0"																	A confused mass of calcareous sand with limestone pebbles and cobbles. It resembles a poor grade of cement. Possibly a cement gouge test where later stripping would expose the results? Third dimension uncertain. Part of a channel filling.			
4	5' 0"	Uc			S	5Y 6/1												Frag's. -1/2"; rootlets, a; slickensides.			
3	12' - 16'	St sh	5' 0"		G	N5												Clayey; fissile; beds 1/32" - 1/8"; platy; mica l - 2, c; sand laminae, r.			
		St sh	5' 0"		G	N5												Clayey; fissile; beds 1/32" - 1/8"; chippy; mica l, c.			
		Cl sh	2' - 6'		G	N5												Silty; fissile; beds 1/32" - 1/8"; chippy.			

SITE/STATION NO.	5-10 (page 1)	LAT °N.	40°52'52"	COUNTY	Lawrence	WEATHERING	JOINTING
COAL SAMPLE NO.(S)	5-C-4, -5	LONG °W.	80°31'05"	TWP.	Little Beaver	COMMENTS	Clay (unit 1) is being used for brick. Coal (unit 5) is unconformable with Units 3 - 4, but conformable with units 6 - 11.
COMPANY	Ralph A. Veon, Inc.	GEOLOGIST	tmb	15' QUADRANGLE	Columbiana		
MINE	Veon # 11	PERMIT	40-3A2	DATE	8-3-67	7 1/2' QUADRANGLE	New Middletown
COAL(S) REPORTED	Lower Kittanning (B) and Middle Kittanning (C).						

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES						C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE										THICK - NESS				
							> 60	30 - 60	15 - 30	0 - 15											
Coals analyzed M/7-7-69																					
4b	5' 0"	Uc			S	5Y 6/2													Solid; frag's. -1/2"; rootlets, a; several bands of hard heavy semi-flint clay to 6" thick.		
4a	1' 6"	Cl sh				N3													Fissile; beds 1/4" - 1/2"; platy; <u>Calamites</u> sp., a. Base unit of a slump block.		
3	16' 0"	Cl sh	6' 0"			N5													Silty; fissile, subfissile; beds 1/8" - 1/2"; chippy, hackly; siderite bands to 2", r; plt. frgs., leaves c; and more silty. upward.		
		Cl sh	8' 0"		G	N5													Subfissile; beds 1/8" - 1/2"; hackly; siderite nodules to 1", c; spores, r; slightly silty upward.		
		Cl sh	2' 0"		G	N4													Fissile; beds 1/8" - 1/2"; platy, chippy; leaves, r; <u>Lingula</u> sp. in lower 5", a.		
																			Unit 3: Thickness decreases to 6' under slumped Middle Kittanning (C) coal, (unit 5).		
2	2' 4"	Coal	0' 4"	24-28	S	N1			+		+	D	1.8	35.6	46.0	16.6	4.48	11977	Bony; pyrite, r.		
		Coal	0' 8"	16-24		N1	+	+			+	MD -D	1.8	34.5	49.5	14.2	1.80	12365	Rough fracture.		
		Coal	0' 10"	6-16		N1	+				+	MD	2.3	35.5	55.2	7.0	1.56	13358	Cubic to rough fracture; fusain partings, r.		
		Coal	0' 6"	0-6		N1	+				+	MB	2.7	34.4	56.5	6.4	1.44	13431	Cubic fracture.		
													2.2	35.0	52.5	10.3	2.02	12892	Seam average of 5-C-4, Lower Kittanning (B) coal.		
1	5' 6" +	Uc	4' 6"		S	N4 - 5Y 4/1													Frag's. 1/2" +; hackly, rubbly; rootlets, <u>Stigmara</u> , a		
		Uc	1' +		G	N6													Silty; frag's. +1/2"; hackly; rootlets, r; siliceous (Not mined.		

TE/STATION NO.		5-10 (page 2)		LAT °N.		40°52'52"		COUNTY		Lawrence		WEATHERING		JOINTING			
COAL SAMPLE NO.(S)		5-C-4, -5		LONG °W.		80°31'05"		TWP		Little Beaver		COMMENTS		Clay (unit 1) is being used for brick. Coal (unit 5) is unconformable with Units 3 - 4, but conformable with units 6 - 11.			
COMPANY		Ralph A. Veon, Inc.		GEOLOGIST		tmb		15' QUADRANGLE		Columbiana							
NE Veon # 11		PERMIT 40-3A2		DATE		8-3-67		7 1/2' QUADRANGLE		New Middletown							
COAL(S) REPORTED		Lower Kittanning (B) and Middle Kittanning (C).															
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S			
ROSS UNIT	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL				PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUNDANCE	THICKNESS										
						> 60 30 - 60 15 - 30 0 - 15	> 1/4" 1/8" - 1/4" 1/32" - 1/8" < 1/32"										
103'																	Coals analyzed M/7-7-69
0' - 10'	cover																Glacial outwash (sand, gravel, and boulders).
	Ss	15'+		S	10YR 8/4												Beds 1/2" - 3"; slabby; mica 2, c; branches, r; very fine to fine-grained, clay matrix.
20' 0"	Ss	5' 0"		G	10YR 7/4												Beds 1/4"-3"; platy, flaggy; current ripples; mica 2-3, c; plt. frgs., c; silt to very fine-grained. Ss beds, r; upward.
10' 0"	Cl sh			S	N6												Fissile; beds 1/4" - 1/2"; platy, chippy; Fe-stain, a.
15' 0"	lss sh lsc sh			S	N5 N5												Fissile; beds 1/8" - 3"; platy, flaggy; chippy; mica. Fissile. Unit 8: Grades upward, as shown; contains fine-grained Ss interbeds to 6". Inaccessible.
1' 6"	Cl sh			S	N2 - 5Y 4/1												Fissile; beds 1/8" - 1/4"; chippy; mica 1, r; plt. frgs., r.
	lss sh St sh lsc st			S G G	5Y 5/1 5Y 5/1 5Y 5/1												Fissile; beds 1/8" - 1/2"; platy, chippy; mica 2, c. Fissile; beds 1/8" - 1/2"; platy, chippy. Beds 1/2" - 3"; flaggy; mica 2, r. Unit 6a: Grades upward, as shown.
6' 0"	Cl sh			G	N5												Fissile; beds 1/8" - 1/4"; chippy; siderite bands to 1/2", r; plt. frgs., c.
1' 3 1/2"	Coal Coal	0' 5 1/2" 0' 10"	10-15 1/2 0-10	S N1	N1	+		+	D MD MB	2.2 2.3 2.3	35.6 34.5 34.9	57.8 58.1 58.0	4.3 5.1 4.8	0.76 1.00 0.91	13844 13549 13654		Cubic fracture; thinner bedded than lower bed. Cubic fracture. Seam average of 5-C-5, Middle Kittanning (C) coal.

SITE/STATION NO.		5-13		LAT °N.		40°53'00"		COUNTY		Lawrence		WEATHERING		slight		JOINTING			
COAL SAMPLE NO.(S)		5-C-8		LONG °W.		80°25'52"		TWP.		Little Beaver		COMMENTS							
COMPANY Dodds Coal Co.				GEOLOGIST		rds		15' QUADRANGLE		New Castle									
MINE		Kenney-Scott		PERMIT		6-6		DATE		8-15-68		7 1/2' QUADRANGLE		Bessemer					
COAL(S) REPORTED				Lower Kittanning (B)		or Middle Kittanning (C).													
S T R A T I G R A P H I C								D A T A		COAL CHEMICAL ANALYSES						C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)					BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON			ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)			
							% ABUN - DANCE	THICK - NESS											
								> 60	30 - 60								15 - 30		
T	20' - 23'																Coals analyzed M/7-25-69		
5	2' - 3'	cover															Contains well rounded and extremely weathered Ss pebbles and cobbles.		
4	8' 0"	Ss			G	N7											Mica 2 - 3, c; plt. frgs., c; fine-to medium-grained good sorting, porous; carbonaceous streaks; beds 3" - 1'.		
3	8' 2"	Sts	4' 0"		S	N4											Subfissile; slabby (weathers very chippy); plt. frgs c.		
		Cl sh	3' 0"			5Y 3/1											Fissile; chippy; siderite nodules, c.		
		Cl sh	1' 2"			N1											Fissile; platy; pyrite crystals, streaks; <u>Lingula</u> sp collected 5" from bottom.		
2	1' 10"	Coal	1' 3"	7-22	S	N1	+		++ B	1.0	40.4	48.5	10.0	1.76		13211	Hard; pyrite streaks weather to a whitish sulfur bloom.		
		Coal	0' 7"	0-7	S	N1	+		++ VB	1.3	36.6	52.7	9.4	1.20		13018	Granular; knife-edge pyrite streaks, r.		
										1.1	39.2	49.9	9.8	1.58		13150	Seam average of 5-C-8, Lower Kittanning (B) or Middle Kittanning (C) coal.		
1		Uc			S	N4											Semi-plastic; slightly silty; plt. frgs., a. Weathered from Cs.		

STATION NO.		5-14		LAT °N.		40°53'02"		COUNTY		Lawrence		WEATHERING		fresh		JOINTING				
SAMPLE NO.(S)		5-C-9		LONG °W.		80°28'25"		TWP.		Little Beaver		COMMENTS		See Site No. 5-15 for continuation of stratigraphy						
ANY		R. A. Veon		GEOLOGIST		rds		15' QUADRANGLE		New Castle		(Units 6 - 13) and total height.								
Reno-Brandt		PERMIT		40-9		DATE		8-14-68		7 1/2' QUADRANGLE		Bessemer		Lower Kittanning (B) or (No. 3) coal 32' below						
(S) REPORTED		Middle Kittanning (C), or (NO. 4).										Middle Kittanning (C) coal.								
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S					
SS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L					P R O X I M A T E (%)				S U L F U R (%)	A I R D R Y I N G L O S S (%)	B R I T I S H T H E R M A L U N I T S	C O M M E N T S		
INTERVAL (TOTAL)						A N T H R A X Y L O N				M O I S T U R E	V O L A T I L E	F I X E D C A R B O N	A S H							
						% A B U N - D A N C E														
						> 60	30 - 60	15 - 30	0 - 15					> 1/4"					1/8" - 1/4"	1/32" - 1/8"
8'																				
Note:																		Units 6 - 13 described at Site 5-15.		
30' 0"	cover																	Upper 15' contains well rounded pebbles, cobbles, and boulders of varying rock types; also a few lt. gr. limestone cobbles, all being outwash materials. Unit 5a (Site 5-14) and unit 13 (Site 5-15) are the same lithology which overlies unit 5 (Site 5-14) but bevels units 6 - 12 (Site 5-15).		
8' 0"	Ss			G	N6													Rubbly; carbonaceous laminae alternate with thin Ss bedding, forming irregular cross-bedding; mica 3, c. Ss is medium-grained; good sorting and porosity; clay matrix.		
8' 0"	Cl sh			S	N3													Hackly; siderite nodules in bands, a; frag's. - 1/2".		
0' 2"	Sh																	Semi-plastic; coaly streaks.		
2' 7"	Coal	0' 6"	25-31	S	N1	+				+	+	MB	0.9	37.2	49.8	12.2	3.16	12800		
	Sh	0' 1"		S															Parting, coaly.	
	Coal	0' 8"	16-24	S	N1	+						+	VB	1.0	39.8	51.3	7.9	2.44	13333	
	Sh	0' 2"		S															Parting, carbonaceous.	
	Coal	1' 2"	0-14	S	N1	+						+	VB	1.0	39.7	52.3	7.0	3.04	13623	Hard; blocky.
														1.0	39.2	51.4	8.3	2.89	13364	Seam average of 5-C-9, Middle Kittanning (C) or (No. 4) coal.
	Uc			S	N4														Semi-plastic; weathered Cs.	

SITE/STATION NO.		5-15	LAT °N.		40°53'06"	COUNTY	Lawrence	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO(S)			5-C-10	LONG °W.		80°28'45"	TWP.	Little Beaver	COMMENTS See Site No. 5-14 for preceding stratigraphy		
COMPANY			R. A. Veon	GEOLOGIST		rds	15' QUADRANGLE	New Castle	(Units 1 - 5a).		
MINE		Reno-Brandt	PERMIT	40-9	DATE		8-14-68	7½' QUADRANGLE	Bessemer	Units 9 - 12 inaccessible.	
COAL(S) REPORTED			Mt. Air (a local coal).								

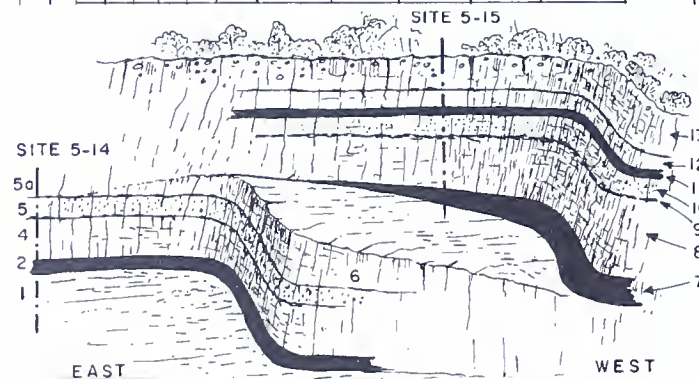
S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN- DANCE	THICK- NESS												
														> 60 30 - 60 15 - 30 0 - 15	> 1/4" 1/8" - 1/4" 1/32" - 1/8" < 1/32"					
T	48' - 51'																Coals analyzed M/7-25-69			
13	2' - 3'+	cover															Thickness increases up the hill slope to 30'. Up 15' contains well rounded pebbles, cobbles, and boulders of varying rock types; also a few lt. limestone cobbles, all being outwash materials. Unit 13 (Site 5-15) and unit 5a (Site 5-14) are t same lithology which bevels units 6 - 12 (Site but overlies unit 5 (Site 5-14).			
12	3' 0"				G												Not examined.			
11	1' 0"	Coal		0-12	S	N1											Not sampled or examined.			
10	6' 0"	Sts			S	5GY 3/1											Slabby; upper 1' more massive.			
9	0' 4"				S												Not examined, but a dark color, possibly a black			
8	19' 0"	Cl sh Cs	5' 0" 14' 0"		S G	5Y 3/1 N1											Subfissile; chippy. Subfissile; slabby, rubbly; carbonaceous; conchoi fracture; upper 2' weathered, lower 12' massive.			
7	2' 4"	Coal Coal	1' 3" 1' 1"	13-28 0-13	S S	N1 N1	++ ++			MB VB	0.8 0.9	38.9 39.9	49.5 50.9	10.8 8.3	3.89 4.21	13115 13381	Blocky; hard. Blocky; hard.			
											0.8	39.3	50.2	9.7	4.04	13238	Seam average of 5-C-10, Mt. Air coal. Thickness varies from a "wedge edge" to 54" in Base of coal dips 3° at N 60° W.			
6	15'+	Cl sh			S	N2											Papery, platy; poorly perserved branches, leaves, coaly streaks, r. Immediately overlies unit 5 (Site 5-15), but is missing at Site 5-14. Beds - 1/8".			
	Note:																Units 1 - 5a described at Site 5-14.			

SITE 5-15

SITE 5-14

EAST

WEST



STATION NO. 5-16		LAT °N. 40°55'37"		COUNTY Lawrence		WEATHERING fresh		JOINTING												
SAMPLE NO.(S) 5-C-11		LONG °W. 80°20'49"		TWP. Shenango		COMMENTS Units 4 - 5 inaccessible.														
PANY Ambrosia Coal & Const. Co.		GEOLOGIST rds		15' QUADRANGLE New Castle																
Turkey Hill		PERMIT 103-1 (C)		DATE 8-13-68		7 1/2' QUADRANGLE New Castle South														
(S) REPORTED Middle Kittanning (C).																				
S T R A T I G R A P H I C				D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S								
SS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE			THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
47'																				
10' 0"	cover																			Contains well rounded sandstone? cobbles.
15' 0"	St sh			G																Becomes interbedded and gn.-bn. upward.
19' 6"	Cl sh	15' 0"		G	N2															Fissile; platy; siderite nodules, r.
	Cl sh	4' 6"		G	N2															Fissile; platy.
2' 5"	Coal	1' 1"	16-29	S	N1	+				+	D	1.2	39.1	47.7	12.0	1.68		12849		Becomes more dull at top.
	Coal	1' 4"	0-16		N1	+				+	MD	1.8	35.5	56.1	6.6	1.58		13308		Discontinuous 1/2" Cl parting 2" from bottom. Attritus luster, MB, upward.
												1.5	37.1	52.3	9.0	1.62		13102		Seam average of 5-C-11, Middle Kittanning (C) coal.
	Uc			S	N3															Semi-plastic; plt. frgs., r; slickensides.

SITE/STATION NO.		5-17		LAT °N.		40°55'16"		COUNTY		Lawrence		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO(S)		5-C-12		LONG °W.		80°27'33"		TWP.		North Beaver		COMMENTS				Ownership changed.					
COMPANY		Negley Fire Clay Co.		GEOLOGIST		rds		15' QUADRANGLE		New Castle		Affiliated with Pittsburgh Refractories?									
MINE		Henderson		PERMIT		280-1C		DATE		8-14-68		7 1/2' QUADRANGLE		Bessemer							
COAL(S) REPORTED		Lower Kittanning		(B)? and Middle Kittanning		(C)?															
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	Coals analyzed M/7-25-69	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	70'																				
11	10'	cover																			
10	12' 0"	Ss			G	N7												Mica 3, c; fine-grained; carbonaceous streaks; coal lens 4" thick x 20' long at 2' from bottom; <u>Calamagrostis</u> sp. and <u>Sigillaria</u> sp., c.			
9	6' 0"	Cl sh			S	N2												Silty; fissile; papery.			
8	0' 4"	Coal		0-4	S	N1												Not sampled or examined. Middle Kittanning (C)? coal.			
7	12' 0"	lsc sh			S	N4 - N6												Platy, chippy; mica 2, c; plt. frgs., c; discontinuous Ss lens 6' from bottom; upper 6" extremely weathered to an Uc; beds 1/32" - 1/8".			
6	2'+	Coal		0-24+	S	N1												Not sampled or examined; inaccessible; water seep.			
5	10' 0"																	Covered interval; inaccessible, mud-covered; possible Cs or Cl sh.			
4	2' 0"	Ss			S	N7												Current ripple marks; fine-grained, porous; carbonaceous; 1' thick at north end of highwall.			
3	14' 0"	Cl sh	9' 0"		G	N3												Fissile; chippy, slabby; mica 2, c; beds 1/32" - 1/8".			
		Cl sh	5' 0"		G	N1 - N4												Platy; siderite nodules; lower 1' fissile; weathered chippy, beds 1/32" - 1/8".			
2	2' 1 3/4"	Coal	0' 3"	22 3/4-25 3/4	S	N1	+			+	D	1.2	37.4	45.1	16.3	4.24	12098				
		Sh	0' 1/4"		S													Parting; carbonaceous.			
		Coal	1' 5"	5 1/2-22 1/2	S	N1	+			+	MD	1.5	36.7	53.4	8.5	1.68	13212	Blocky; hard.			
		Coal	0' 5 1/2"	0-5 1/2		N1	+			+	MD	1.7	34.8	57.6	5.9	2.11	13454	Friable. Wet when sampled.			
												1.5	36.3	53.3	8.9	2.07	13133	Seam average of 5-C-12, Lower Kittanning (B)? coal.			
1		Uc			S	N5												Weathered Cs.			

TE/STATION NO.	14-3 (page 1)	LAT °N.	41°03'34"	COUNTY	Lawrence	WEATHERING	fresh	JOINTING	N-S, N60°W.
AL SAMPLE NO(S)		LONG °W.	80°10'57"	TWP.	Plain Grove	COMMENTS			
MPANY	J. H. Philby Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Mercer				
NE	PERMIT 57-2A	DATE	5-25-66	7 1/2' QUADRANGLE	Harlansburg				
AL(S) REPORTED Lower Kittanning (B).									

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
ROSS UNIT	L I T H O L O G Y	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
						% ABUN - DANCE									THICK - NESS						
						> 60	30 - 60	15 - 30	0 - 15							> 1/4"	1/8" - 1/4"				
2' 4" - 2' 5"	Coal	1' 1"	16-29	S	N1					+	+	+	+	B						Blocky fracture; fusain-vitrain partings to 1/4" locally.	
	Pyrite & St sh	0" - 1"		S	N5															Parting, persistent.	
	Coal	1' 3"	0-15	S	N1									B						Blocky to irregular fracture; dull zones, r; fine pyrite partings, r. Unit 2: Lower Kittanning (B) coal.	
	Uc			S	N7															Non-silty; frag's. -1/2"; <u>Stigmara</u> ; slickensides.	

SITE/STATION NO.		14-7		LAT °N.		41°02'17"		COUNTY		Lawrence		WEATHERING		JOINTING					
COAL SAMPLE NO.(S)		14-C-4		LONG °W.		80°14'07"		TWP.		Scott		COMMENTS							
COMPANY		Perry Ross Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Mercer		Sh highly fractured, breaks into small cube-like pieces. Coal (unit 2) "rolls down" in two pla							
MINE		Perry Ross #10		PERMIT		72-5		DATE		8-2-67		7 1/2' QUADRANGLE		Harlansburg		to from 8' - 15' in 200 yards, with a correspo			
COAL(S) REPORTED		Lower Kittanning (B).														increase in thickness of unit 3.			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)			
							% ABUN- DANCE	THICK- NESS											
																			> 60
		30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"												
Coals analyzed M/7-7-69																			
T	54'																		
5	20' 0"	cover														Channel glacial outwash (clay; granite boulders).			
4	10' 0"	Ss			S	10YR 7/2										3" - 1' beds (thin upward); slabby, blocky; mica 2 fine-grained, excellent sorting, angular, clay matrix, a; silica cement, limonite, c. Cut out outwash materials.			
3	21' 0"	St sh	9' 0"		S	5Y 6/1										Fissile; chippy; mica 2, c; plt. frgs., c.			
		Cl sh				N5										Fissile; chippy; mica 1, c.			
		Cl sh	10' 0"		G	N4										Fissile; beds 1/8" - 1/2"; chippy; mica 1, r; becomes silty, N5, upward.			
		Cl sh	2' 0"		S	N3										Fissile; beds 1/8" - 1/4"; platy; hard.			
2	2' 7"															Unit 3: Intensely folded under glacial outwash (Unit 5).			
		Coal	1' 0"	19-31	S	N1		+		+	D	1.6	36.9	53.2	8.3	1.42	13066	Knife-edge pyrite partings, r.	
		Coal	0' 10"	9-19		N1		+		+	MD	2.0	34.8	57.9	5.3	1.28	13318	1/2" thick bone at top (included in 10").	
		Coal	0' 9"	0-9		N1		+		+	MD	2.3	32.3	60.0	5.5	1.55	13342	Fusain and bony partings to 1/8", r.	
																	13248	Seam average of 14-C-4, Lower Kittanning (B) coal.	
1	1'+	Uc			S	N3											Frag's. 1/2"±; hackly.		

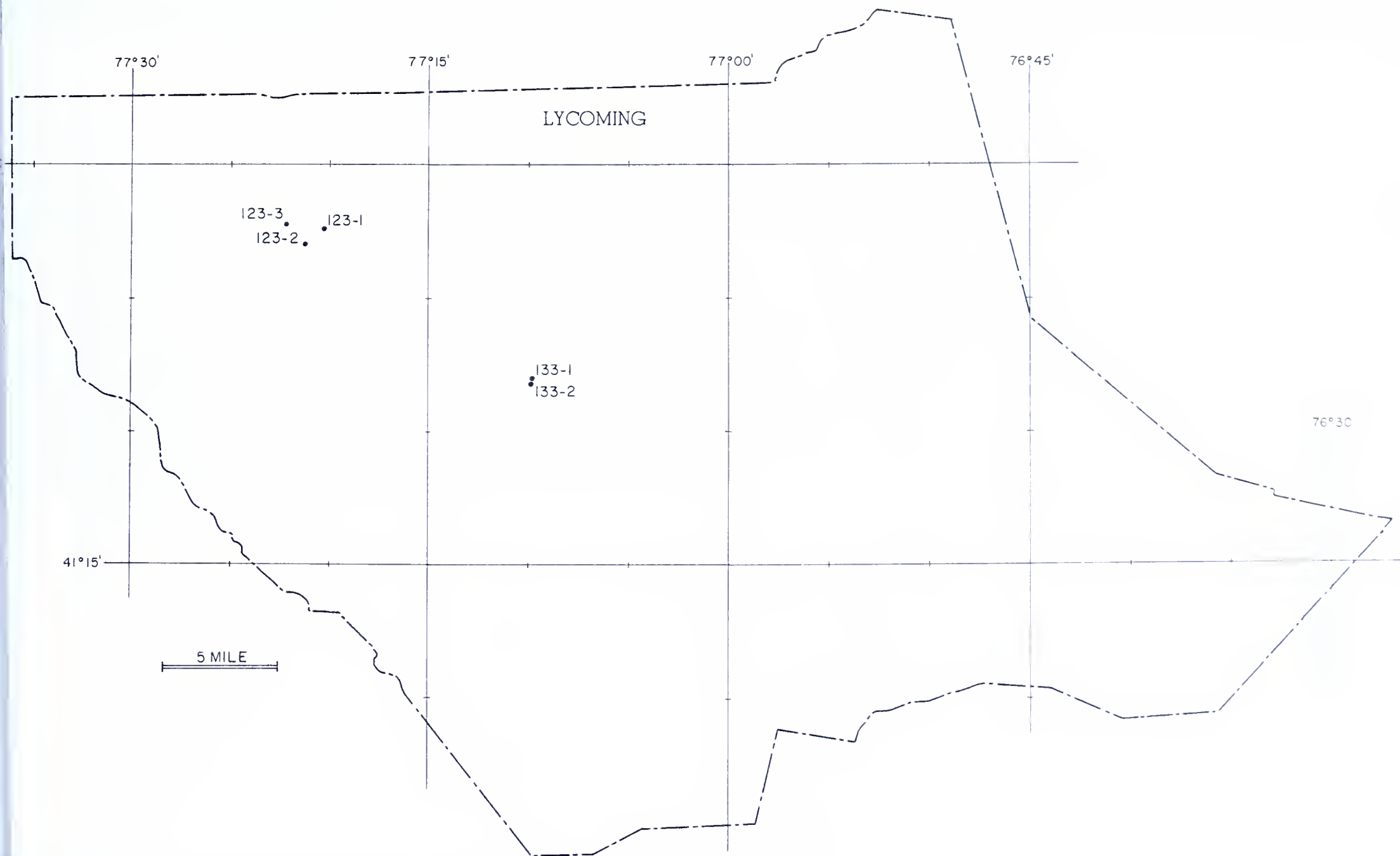
E/STATION NO.		14-8		LAT °N.		41°03'22"		COUNTY		Lawrence		WEATHERING		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
AL SAMPLE NO.(S)		14-C-5		LONG °W.		80°06'57"		TWP.		Plain Grove		COMMENTS		Channel axis appears to be NE-SW.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
MPANY		Willowbrook Mining Co.		GEOLOGIST		tmb		15' QUADRANGLE		Mercer																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
VE		Grossman		PERMIT		130-3 (A2)		DATE		8-1-67		7 1/2' QUADRANGLE		Slippery Rock																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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SITE/STATION NO.		14-11		LAT °N.		41°03'21"		COUNTY		Lawrence		WEATHERING		fresh		JOINTING			
COAL SAMPLE NO.(S)		14-C-7		LONG °W.		80°14'43"		TWP.		Washington		COMMENTS						Operator indicates Vanport limestone about 60'	
COMPANY				Ambrosia Coal & Constr. Co.				GEOLOGIST		adg		15' QUADRANGLE		Mercer		below this coal.			
MINE		Edie		PERMIT		103-7		DATE		7-31-68		7 1/2' QUADRANGLE		Harlansburg					
COAL(S) REPORTED				Lower Kittanning (B)?															

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						1/32" - 1/8"				
T	33' - 38'																		Coals analyzed M/7-25-69			
4	10' - 15'	cover																	Glacial materials and soil.			
3	20' 0"	Cl sh				N2, 5Y 2/1													Silty; fissile, chippy; leaves at bottom, c; beds 1 - 1/4".			
2	2' 9"	Coal	1' 3"	18-33	S	N1		+		+	+	MD	2.2	36.4	51.2	10.3	1.34		12849	Bony.		
		Bone & Fusain	0' 1"		S															Parting.		
		Coal	1' 5"	0-17	S	N1		+			+		MD	2.7	35.5	55.8	6.0	1.40		13357		
														2.4	35.9	53.6	8.0	1.37		13119	Seam average of <u>14-C-7</u> , Lower Kittanning (B)? coal.	
1		Uc			S	N3																

SITE/STATION NO.		15-3		LAT °N.		40°54'00"		COUNTY		Lawrence		WEATHERING		moderate		JOINTING						
CAL SAMPLE NO(S)		15-C-1		LONG °W.		80°09'42"		TWP		Perry		COMMENTS										
COMPANY		Kerry Coal Co.		GEOLOGIST		rds		15' QUADRANGLE		Zellenople												
NAME		Kerry No. 11		PERMIT		41-11		DATE		8-13-68		7 1/2' QUADRANGLE		Portersville								
CAL(S) REPORTED		Middle Kittanning (C).																				
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL					PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
INTERVAL (TOTAL)	% ABUN - DANCE						THICK - NESS		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH									
	> 60						30 - 60	15 - 30						0 - 15	> 1/4"					1/8" - 1/4"	1/32" - 1/8"	< 1/32"
20' - 21'																						
5' - 6'	cover																					
12' 0"	Ss				G	N6												Blocky; fine-grained; good sorting; carbonaceous streaks, a; channel fillings, a; beds 1/2" - 1'.				
2' 9"	Coal	0' 7"	26-33	S	N1	+			+	MD	1.1	39.0	46.1	13.8	6.98		12679					
	Coal	0' 1/2"	25 1/2 - 26		N1													Bony; not sampled.				
	Coal	0' 3"	22 1/2 - 25 1/2		N1													Nonbanded; not sampled.				
	Coal	1' 2"	8 1/2 - 22 1/2		N1	+			+	MB	1.4	37.7	50.5	10.4	4.06		13091	Pyrite lens to 1/2" thick.				
	Cl	0' 1/2"		S														Parting.				
	Coal	0' 8"	0-8	S	N1	+			+	MB	1.6 1.4	36.9 37.8	54.9 50.7	6.6 10.1	3.76 4.68		13647 13145	Knife-edge pyrite streaks in lower 4". Seam average of 15-C-1, Middle Kittanning (C) coal.				
	Uc			S	N2													Semi-plastic.				

SITE NO. 15-6



SITE/STATION NO.		123-1		LAT °N.		41°27'37"		COUNTY		Lycoming		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		123-C-1		LONG °W.		77°20'04"		TWP.		Pine		COMMENTS									
COMPANY				Donald E. Fisher				GEOLOGIST		adg		15' QUADRANGLE		Waterville							
MINE		Bucky Run #1		PERMIT		80-1		DATE		6-2-66		7 1/2' QUADRANGLE		English Center							
COAL(S) REPORTED				Middle Kittanning (C).																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE														
							THICK - NESS														
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"												
T	23' - 26'																				
4	20' 0"	Ss				N7											Beds 3" - 1'; cross-bedding; plt. frgs.; fine- to medium-grained, fair sorting, subangular; silica cement, c; dark minerals, r, clay galls, a; coaly streaks at bottom.				
3	0' - 3'	Sh			S	N6											Sandy; beds 1/4" - 1/2"; plt. frgs.				
2	0" - 4"	Sh			U	N1											Beds 1/32" - 1/4"; chippy; plt. frgs.; carbonaceous.				
1	3' 2 1/2"	Coal	0' 8 1/2"	30-38 1/2	S	N1						0.9	32.5	58.8	7.8	0.74	13930	Thin Sh partings.			
		Coal	0' 8"	22-30		N1						0.8	19.6	66.6	13.0	0.58	13090	Bony.			
		Sh	0' 2"			N1												Parting; bony.			
		Coal	1' 8"	0-20		N1					D	0.7 0.8	19.8 22.7	69.8 66.5	9.7 10.0	0.70 0.68	13670 13603	Cubic fracture; bony. Seam average of 123-C-1, Middle Kittanning (C) coal			

SITE/STATION NO.	123-2 (page 2)	LAT °N.	41°27'04"	COUNTY	Lycoming	WEATHERING	fresh	JOINTING	N32°W, N60°E.
COAL SAMPLE NO.(S)	123-C-2	LONG °W.	77°21'05"	TWP.	Pine	COMMENTS			
COMPANY	Donald E. Fisher	GEOLOGIST	wee	15' QUADRANGLE	Waterville				
MINE	PERMIT 80-2	DATE	6-14-67	7 1/2' QUADRANGLE	English Center				
COAL(S) REPORTED	Cushing coal.								

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"								
T	50'																					
5I	to 20'+	Ss				N5												Fissile; beds 1" - 4"; slabby; mica 1 - 2, a; plt. frgs., c; silt to fine-grained, poor sorting sub-angular, clay matrix, dark minerals.				
5H	8' 0"	Ss				N5												Fissile; beds 1/2" - 2"; slabby; mica 1, c; plt. fr silt to very fine-grained, fair sorting, subround clay matrix, dark minerals.				
		Cl sh				N2											Fissile; beds -1/32"; papery; mica 1, c; plt. frg Cl sh and Ss, interbedded as 1' thick interbeds					
5G	7' 0"	Ss			S	5Y 6/1												Beds 1" - 6"; slabby, mica 1 - 2, c; plt. frgs., silt to fine-grained, poor sorting, rounded, clay matrix, dark minerals.				
5F	0" - 1' 3"	Coal			S	N1												Cubic fracture; partings, c. Not sampled.				
5E	0' - 5'	Sts			S	N3												Fissile; beds 1/8" - 1/4"; chippy; mica 1, c; plt. c; fusain, a.				
5D	6' 0"	St sh	0' - 1'		L	N3												Fissile; beds 1/8"-1/4"; chippy; mica 1 - 2, c; plt. frgs., leaves, a; anthraxylon.				
		Ss	0' - 5'		L	5Y 6/1											Beds 3"-1'; slabby; mica 1 - 2, c; plt. frgs., c; silt to fine-grained, poor sorting, rounded, clay matrix, dark minerals; coal fragments.					
5C	0" - 8"	Coal			S	N1	+			+		MB						Cubic fracture; partings, c; fusain, a. Not sampled.				
5B	0' to 1'	St sh			S	N3												Fissile; beds 1/4"-1/2"; chippy to hackly; mica a; plt. frgs., c.				
5A	0' to 1'	Coal			S	N1						D						Cubic fracture; partings, a; anthraxylon thickness variable. Not sampled.				

TE/STATION NO.	123-3	LAT °N.	41°27'48"	COUNTY	Lycoming	WEATHERING	slight	JOINTING	N25°W.
COAL SAMPLE NO.(S)	123-C-3	LONG °W.	77°22'03"	TWP.	Pine	COMMENTS			
COMPANY	Donald E. Fisher	GEOLOGIST	wee	15' QUADRANGLE	Waterville				
NE	PERMIT 80-3	DATE	6-14-67	7½' QUADRANGLE	English Center				
COAL(S) REPORTED	"E"								

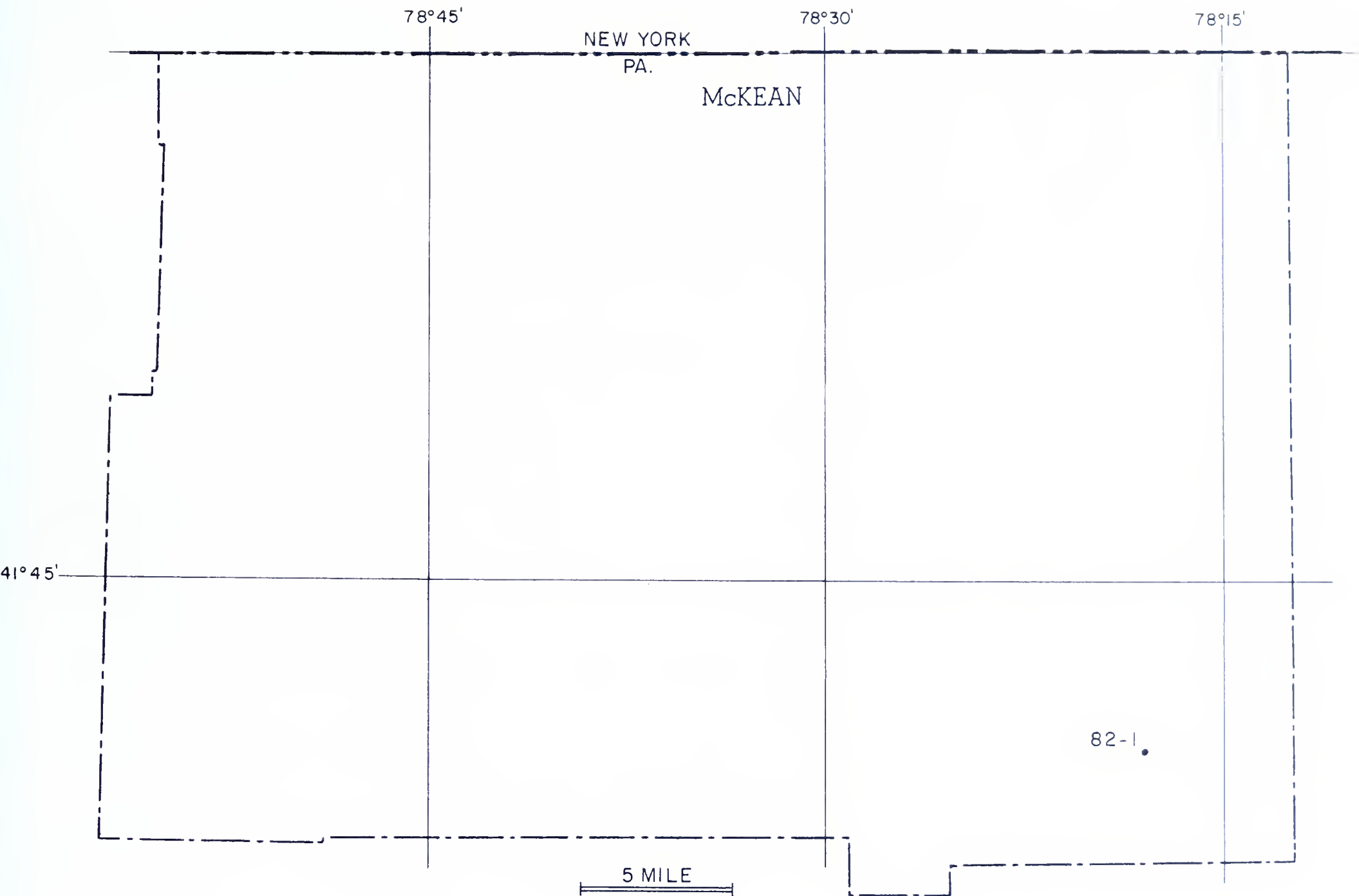
S T R A T I G R A P H I C D A T A											C O A L C H E M I C A L A N A L Y S E S						C O M M E N T S				
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L								P R O X I M A T E (%)				S U L F U R (%)	A I R D R Y I N G L O S S (%)	B R I T I S H T H E R M A L U N I T S	
INTERVAL (TOTAL)						A N T H R A X Y L O N						A T T R I T U S L U S T E R	M O I S T U R E	V O L A T I L E	F I X E D C A R B O N	A S H					
						% A B U N - D A N C E				T H I C K - N E S S											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						1/32" - 1/8"				
35' - 39'																		Coals analyzed M/7-7-69			
30'+	Ss				N5 - N7													Fissile; beds 2" - 2' (thinner bedded upward); flaggy, slabby; large-scale cross-bedding SW dip; channel axis N40°E; mica 1 - 2, c - a; all types plant fragments, c - a; fine-to medium-grained, clay matrix, dark minerals, rock fragments, clay. St sh/Cl sh-pebble conglomerate, with some to cobble size, all highly irregular, indicating short transport.			
3 to 4'	Cs - Cl sh			U	N5													Fissile; beds 1/4" - 2"; chippy, hackly; plt. frgs., leaves, a. A stratigraphic remnant below unit 4.			
2 0' 4"	Cs			G	N2													Frag's. -1/2"; hackly; anthraxylon stringers, r.			
1 4' 8"	Coal	0' 9"	47-56		N1		+		+	MB	0.7	20.6	68.7	10.0	1.44	13574		Cubic fracture; fusain partings to 1/2"; peacock stain.			
	Bone	0' 3"	44-47	G	N2					D	0.6	16.3	57.5	25.6	0.46	10840		Anthraxylon stringers, r. Sampled.			
	Coal	0' 8"	36-44	G	N1			+		MB	0.6	20.4	63.9	15.1	0.62	12800		Splintery fracture.			
	Bone	0' 3"	33-36	G	N2					D	0.7	15.4	50.4	33.5	0.46	9775		Anthraxylon stringers, r. Sampled.			
	Coal	2' 4"	5-33	G	N1			+		MB	0.4	20.3	67.7	11.6	0.64	13381		Cubic fracture.			
	Cs	0' 2"		S	5YR 2/1													Parting; fissile; hackly, hard; plt. frgs., c.			
	Coal	0' 3"	0-3	S	N1		+			D	0.4	19.4	55.8	24.4	0.58	11348		Not mined.			
											0.5	19.8	65.1	14.5	0.75	12872		Seam average of 123-C-3, "E" coal.			

SITE/STATION NO.		133-1 (page 1)		LAT °N.		40°22'00"		COUNTY		Lycoming		WEATHERING		slight -		JOINTING		N-S, E-W.			
COAL SAMPLE NO.(S)		133-C-2, -3		LONG °W.		79°09'48"		TWP.		Cogan House		COMMENTS						All coals in this section appear to be splits of a single coal complex.			
COMPANY				Paul Percival				GEOLOGIST		wee		15' QUADRANGLE		Trout Run							
MINE		Cogan Station		PERMIT		131-3		DATE		6-16-67		7 1/2' QUADRANGLE		Salladasburg							
COAL(S) REPORTED				"Bloss".																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH								
							% ABUN - DANCE	THICK - NESS													
														> 60	< 1/32"						
																			Coals analyzed M/7-7-69		
4	15' 0"	Ss	7' 0"		S	N6													Silty; beds 1/2" - 2"; slabby; cross-beds dip W; mica c; plt. frgs., c; silt to fine-grained, fair sort subangular, clay matrix, silica cement.		
		Iss sh	2' 0"		G	N3 - N6													Fissile; beds 1/32" - 1/4"; slabby; mica l, c; plt. f c.		
		Isc st	2' 6"		G	N3 - N6													Beds 1" - 3"; mica l, c; plt. frgs., c.		
		Sts	3' 6"		G	N3													Chips 1/2" - 3"; chippy; mica l, c; plt. frgs., r.		
3	2' 6"	Cl sh			S	N3 - N4													Fissile; beds 1/32" - 1/8"; chippy, equant; plt. f leaves, a.		
2	2' 9"	Coal	0' 7 1/2"	25 1/2-33	S	N1	+			+	B	0.8	16.8	70.3	12.1	2.20		13114	Cubic fracture.		
		Cl sh	0' 4"		S	N2													Coaly; fissile; beds 1/32" - 1/8"; chippy; plt. frg		
		Coal	0' 8 1/2"	13-21 1/2	S	N1		+		+	MB	0.8	16.9	68.8	13.5	1.50		13042	Splintery fracture; fusain, a.		
		Cs	0' 3"		S	N2 - N3													Parting; silty; frag's. + 1/2"; rubbly.		
		Coal	0' 4 1/2"	5 1/2-10	S	N1		+		+	+	D	0.6	13.6	42.5	43.2	0.70		8150	Cubic fracture; fusain, a.	
		Sh	0' 5 1/2"		G	N1													Coaly; subfissile; beds 1/8" - 1/4"; chippy; plt. fr leaves, a; anthraxylon stringers.		
												0.8	16.1	63.6	19.5	1.58		11994	Seam average of 133-C-3, Bloss coal.		
1	0' 5"+	Uc			S	N6													Frag's. - 1/2".		

SE/STATION NO.	133-1 (page 2)	LAT °N.	40°22'00"	COUNTY	Lycoming	WEATHERING	slight	JOINTING	N-S, E-W
COAL SAMPLE NO.(S)	133-C-2, -3	LONG °W.	79°09'48"	TWP.	Cogan House	COMMENTS	All coals in this section appear to be splits of a single coal complex.		
COMPANY	Paul Percival	GEOLOGIST	wee	15' QUADRANGLE	Trout Run				
WE Cogan Station	PERMIT 131-3	DATE	6-16-67	7 1/2' QUADRANGLE	Salladasburg				
COAL(S) REPORTED	"Bloss"								

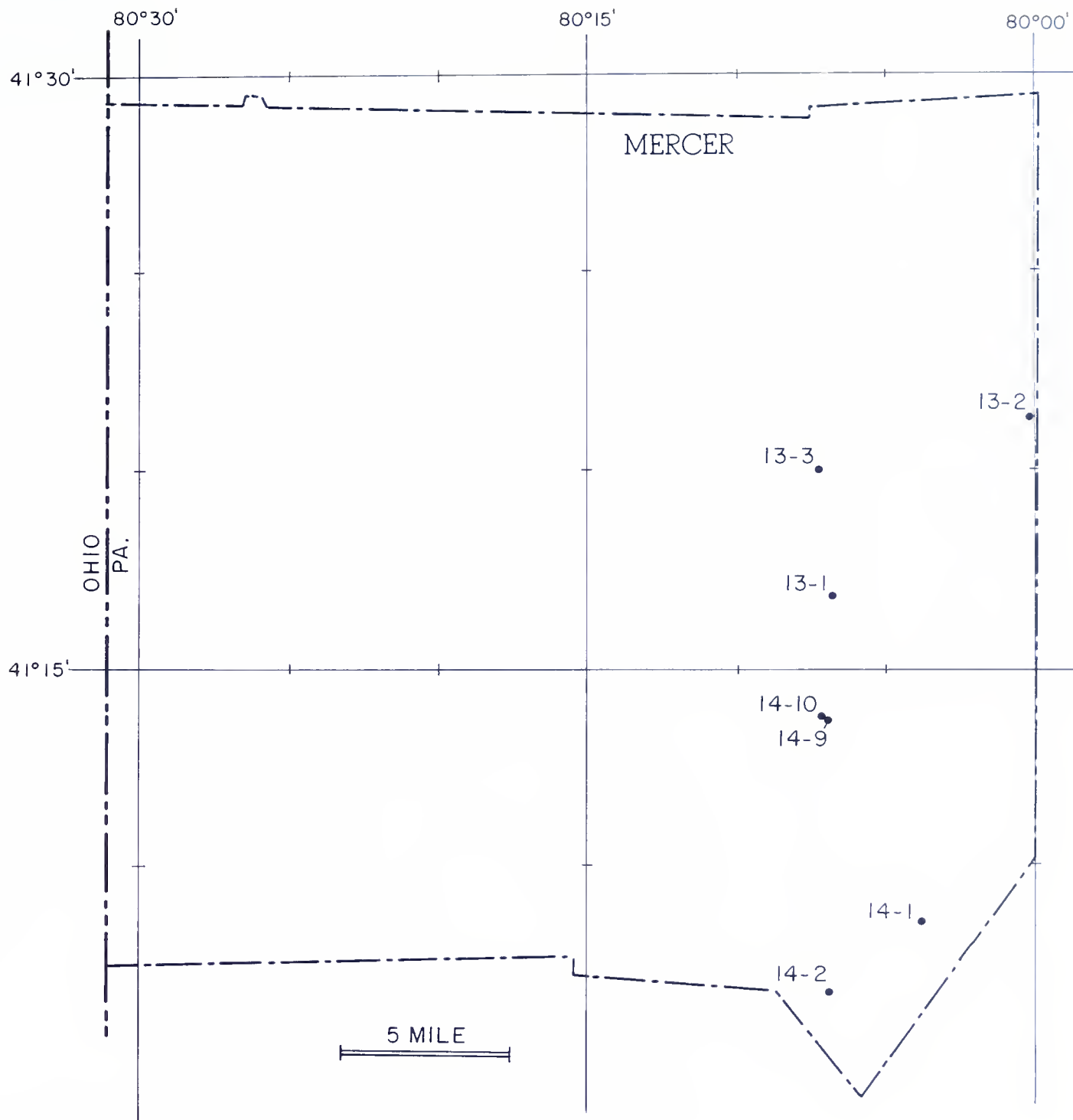
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S														
INTERVAL (TOTAL)	L T H O L O G Y	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS											
						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH								
						% ABUN - DANCE		THICK - NESS		ATTRITUS	LUSTER											MOISTURE	VOLATILE	FIXED CARBON	ASH				
						> 60	30 - 60	15 - 30	0 - 15																	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"
53'																		Coals analyzed M/7-7-69											
20'+	Ss				N6													Fissile; beds 1/4" - 4"; chippy, slabby; mica 1 - 2, c; plt. frgs., c; very fine to fine-grained, good sorting, angular, silica cement, dark minerals; coaly beds, r.											
3' 6"	Coal	0' 11"	31-42	U	N1			+		+	MB	3.2	24.2	65.7	6.9	0.42		12439	Upper 2" weathered. Cubic fracture.										
	Coal	0' 3"	28-31	G	N1			+		+	B	1.9	24.2	68.1	5.8	0.48		13044	Cubic fracture.										
	Coal	0' 3 1/2"	24 1/2 - 28	G	N1	+			+	+	B	1.9	17.4	78.2	2.5	0.52		14326	Cubic fracture.										
	Coal	0' 3 1/2"	21-24 1/2	G	N1		+			+	B	1.6	17.4	78.9	2.1	0.58		14615	Cubic fracture.										
	Coal	0' 10"	11-21	G	N1		+		+	+	MB	1.6	17.1	76.8	4.5	0.50		14204	Irregular fracture.										
	Coal	0' 6 1/2"	4 1/2 - 11	G	N1			+		+	B	1.3	16.0	76.0	6.7	0.54		13913	Cubic fracture.										
	Cs	0' 1 1/2"		S	N2														Parting; coaly; frag's. - 1/2".										
	Coal	0' 3"	0-3	S	N1			+		+	MB								Cubic fracture. Not sampled.										
												2.1	19.6	73.0	5.3	0.49		13592	Seam average of 133-C-4, Bloss coal Unit 9: Locally thickens to 4'.										
1' 6"	Uc			S	N5														Silty; frag's. - 1/2"; hackly; mica 1, c; plt. frgs., <u>Stigmara</u> , a.										
1' 5"	Coal		0-17	S	N1			+		+	MB	1.9	17.0	71.9	9.2	0.68		13163	Cubic fracture; upper 2" is bony. <u>133-C-1</u> , Bloss coal.										
4' 0"	Sts			S	N3															Beds and lenses, frag's. 1/2"±; equant, blocky, hackly, rubbly; mica 1, c; plt. frgs., <u>Stigmara</u> , c.									
	Uc			L	N5															Frag's. - 1/2"; hackly; plt. frgs., <u>Stigmara</u> , c. Unit 6: Interbedded.									
1' 6 1/2"	Coal	0' 3 1/2"	15-18 1/2	S	N1			+		+	MD	1.1	12.9	55.3	30.6	0.39		9954	Parting.										
	Coal	0' 9"	6-15		N1			+		+	MD	1.2	14.7	66.9	17.2	0.48		12195	Irregular fracture.										
	Coal	0' 6"	0-6	G	N1			+		+	MB	1.1	15.4	67.6	15.9	1.10		12776	Extremely weathered; granular fracture.										
												1.1	14.6	64.9	19.3	0.66		11959	Seam average of <u>133-C-2</u> , Bloss coal.										

SITE/STATION NO. 133-2		LAT °N. 41°21'46"		COUNTY Lycoming		WEATHERING moderate		JOINTING : (Coal) N27°W, N68°E.													
COAL SAMPLE NO.(S) 133-C-5, -6		LONG °W. 77°09'55"		TWP. Coogan House		COMMENTS : (Underclay) N2°W, N79°W.															
COMPANY Paul Percival		GEOLOGIST qbg		15' QUADRANGLE Trout Run		1' 6" of coal underlies unit 1, and is mined according to mine inspector. Uc joints gap 6" on floor.															
MINE Coogan Station		PERMIT 131-1		DATE 8-6-68		7 1/2' QUADRANGLE Salladasburg		remain open for 25'+ laterally.													
COAL(S) REPORTED		Bloss																			
S T R A T I G R A P H I C D A T A						COAL CHEMICAL ANALYSES				C O M M E N T S											
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)		BRITISH THERMAL UNITS	Coals analyzed M/7-25-69					
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)		
							% ABUN - DANCE	THICK - NESS		1/8" - 1/4"										1/32" - 1/8"	< 1/32"
								> 60	30 - 60												
T	50' - 51'																				
		Ss	30' 0"			N5										Beds 1/2"-1'; flaggy; cross-bedding N30°W, 12° dip; branches, c; medium-grained, subangular, clay matrix; dark minerals, r; coal stringers to 1", c - r; Fe stain, c; shale lenses local.					
9	31' - 32'	Ss	1' - 2'		G	N5 - 5YR 4/1										Beds 1/2"-6"; rubbly; mica 2, a; branches, c; fine grained, fair sorting, subangular to subrounded, matrix, a; clay shale fragments to 3/4", c; coal stringers to 1/4", a.					
8	1' 3"	St sh			U	N1 - N3										Clayey; subfissile; beds 1/8" - 1/4"; slabby; leaves coal laminae to 1/4", c.					
-7	0' 7"	Uc			G	N4 - N5										Plastic, but shaly or hackly; frag's. -1/2".					
6	1' 0"	Coal		0-12	S	N1	+			+		B				Thin fusain parting, c.					
5	0' 11"	Uc			S	N5 - 5YR 4/1										Shaly; frag's. +1/2"; hackly.					
4	5' 1" - 5' 2"	Coal	3' 8"	18-62	S	N1	+			++		MB	4.8	25.8	55.4	14.1	0.40	10380	Soil covered joints.		
		Cl sh	1" - 2"		S	N1												Fissile; beds 1/32" - 1/8"; flaggy; leaves, a; coal laminae to 1/8", c; sampled with overlying coal.			
		Coal	1' 4"	0-16	S	N1	+			++		B	3.1 4.3	22.0 24.8	67.2 58.5	7.7 12.4	0.41 0.40	12437 10928	Bottom 3" is nonbanded. Seam average of 133-C-6, Bloss coal.		
3	3' 7"	Uc			S	N3 - N5												Shaly; frag's. -1/2"; chippy, hackly; rootlets, <u>Stictomaria</u> , a; red ochre stain.			
2	2' 10 1/2"	Coal		0-34 1/2	S	N1	+			+		MB	3.8	26.4	54.4	15.5	0.46	10743	Joints clay covered; upper 2' bony or nonbanded; f and Cs partings to 1/2", c. 133-C-5, Bloss coal.		
1	3'+	Uc			S	N1 - N3													Frag's. -1/2"; hackly; siderite nodules 1" - 6"; rootlets, a; slickensides. Weathered Cs.		



SITE/STATION NO.	82-1	LAT °N.	41°40'17"	COUNTY	McKean	WEATHERING	JOINTING
COAL SAMPLE NO.(S)	82-C-1	LONG °W.	78°17'54"	TWP.	Norwich	COMMENTS	Faulting in evidence, with 3' - 4' vertical displacement.
COMPANY	C. & A. Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	Crosby		
MINE	Railroad #3	PERMIT	comments	DATE	8-9-66	7 1/2' QUADRANGLE	Norwich
COAL(S) REPORTED	Alton.						Operator Permit No.: 290-1 & 1A (or 291-1).

S T R A T I G R A P H I C D A T A																	COAL CHEMICAL ANALYSES					C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE				THICK - NESS		ATTRITUS	LUSTER	MOISTURE	VOLATILE				FIXED CARBON	ASH		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"											
T	26' - 30'																						
10	12'+	Ss				N8, 10YR 8/6												Beds 3' - 2'; <u>Calamites</u> sp., r; mica, a; angular contact; fine- to medium-grained, clay matrix; meable; carbonaceous material. This channel Ss cut out a rider coal.					
9	3' 6" - 8'	lsc sh			U	N5												Fissile; beds 1/32" - 1/2"; platy, chippy; siderite nodules, r; carbonaceous material; mostly Cl sh.					
8	0' - 1' 6"	Cl			S	N5												Very plastic, but solid.					
7	0' 1 1/2"	Siderite			S													Persistent band.					
6	6" - 8"	Cl sh			S	N2 - N3												Fissile; beds 1/32" - 1/2"; platy, chippy, hackly; tered siderite nodules to 3" thick.					
5	3' 4"	Cl sh			G	N2												Fissile; beds 1/4" - 1/2"; platy, hackly.					
4	0' 4"	Cl sh			G	N1												Fissile; beds 1/32" - 1/4"; chippy; plt. frgs., r coaly laminae, r; carbonaceous.					
3	1' 10"	Coal	0' 10"	12-22		N1		+			+ + D- VD	1.0	32.8	60.6	5.6	2.08	13850	Cubic fracture; some knife-edge partings.					
		Clay	1/8" - 1/4"															Parting.					
		Coal	0' 9"	2 3/4 - 11 3/4		N1		+				+ + D	1.0	32.8	59.3	6.9	2.47	13700	Cubic fracture; more knife-edge partings than up of coal.				
		Pyrite	0' 1 1/2"																Parting.				
		Coal	0' 2 1/4"	0-2 1/4	G	N1		+				+ + B	1.1 1.0	32.7 32.8	58.8 59.9	7.4 6.3	1.53 2.19	13540 13753	Seam average of <u>82-C-1</u> , Alton coal. Unit 3: Coal thickness varies several inches erally.				
2	0' 6"	Sts			S	N2												Fissile; beds 1/2" - 3"; mica, c; rootlets; sandy inae, r.					
1	2' 4"+	Uc			S	N3												Solid; mica, r; rootlets, a; silty, N5, near top					



SITE/STATION NO.		13-1 (page 1)		LAT °N.		41°16'46"		COUNTY		Mercer		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)		13-C-1		LONG °W.		80°06'45"		TWP.		Jackson		COMMENTS									
COMPANY		Center Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Stoneboro											
MINE		Center No. 2		PERMIT		204-2		DATE		8-8-67		7 1/2' QUADRANGLE		Sandy Lake							
COAL(S) REPORTED		Brookville.																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
Coals analyzed M/7-7-69																					
2	4' 9"	Coal	1' 6"	39-57	S	N1			+		+		D	2.6	39.2	51.3	6.9	3.96	13211	Blocky to rough fracture; fusain-pyrite parting to 1/4", r.	
		Coal	0' 8"	31-39		N1			+		+	+	D	2.2	38.7	50.8	8.4	2.92	12799	Blocky.	
		Coal	1' 2"	17-31		N1		+			+		MD	2.7	40.2	52.1	5.0	2.82	13515	Cubic to rough fracture; knife-edge fusain-pyrite parting, r.	
		Coal	1' 5"	0-17		N1		+			+		MD	2.9	38.3	52.6	6.3	2.52	13163	Cubic fracture; fusain parting, r.	
														2.7	39.1	51.8	6.4	3.10	13213	Seam average of 13-C-1, Brookville coal.	
1	few " +	Uc			S	N2														Very slightly silty; subfissile; beds 1/2" - 3"; hack rootlets, r.	

SITE NO. 13 - 1 (page 2)

SITE/STATION NO.		13-2		LAT °N.		41°21'12"		COUNTY		Mercer		WEATHERING		JOINTING					
COAL SAMPLE NO.(S)		13-C-2		LONG °W.		80°00'03"		TWP.		Sandy Lake		COMMENTS							
COMPANY				Testa Bros., Inc.				GEOLOGIST		tmb		15' QUADRANGLE		Stoneboro					
MINE		Testa # 3		PERMIT		284-3 (A)		DATE		8-9-67		7 1/2' QUADRANGLE		Sandy Lake					
COAL(S) REPORTED				Lower Clarion.															
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)				
							% ABUN - DANCE	THICK - NESS											
																> 60			30 - 60
Coals analyzed M/7-7-69																			
T	32' - 35'																		
4	28' 0"	Ss				N7										Beds 1/2" - 1'; small- and large-scale cross-bedding; mica 2, c; plt. frgs., branches, r; fine- to medium grained, good sorting, angular, clay matrix, dark minerals, c; thinner bedded upward; occasional apparent Sh, N1, in Ss disconformity.			
3	0' - 3'	Cl sh				N5										Fissile; beds 1/8" - 1/2"; platy, chippy.			
2	3' 5"	Coal	0' 8"	33-41	S	N1	+			+	D	2.8	38.4	45.2	13.6	9.38	11760	Platy; pyrite partings to 1/4", r.	
		Coal	1' 0"	21-33		N1	+	+		+	+	D	2.2	41.0	43.4	13.3	3.83	12267	Cubic to rough fracture; pyrite partings to 1/4", r; discontinuous pyrite-fusain parting at top.
		Coal	1' 4"	5-21		N1	+			+		D	2.9	37.1	46.7	13.3	9.21	12052	Cubic to rough fracture; pyrite partings to 1/2", r; 1/2" - 3/4" pyrite-bone parting at top (included in 1' 4").
		Coal	0' 5"	0-5		N1	+			+		MB	2.9	34.0	41.4	21.7	10.50	10524	Pyrite or bone partings, r.
													2.7	38.1	44.8	14.4	7.83	11871	Seam average of 13-C-2, Lower Clarion coal.
1		Uc			S	N4												Powdery; subfissile; beds 1/4" - 1/2"; hackly; rootlike	

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SITE/STATION NO.		14-1		LAT °N.		41°08'33"		COUNTY		Mercer		WEATHERING		slight		JOINTING						
COAL SAMPLE NO.(S)		14-C-1		LONG °W.		80°03'42"		TWP.		Pine		COMMENTS										
COMPANY				Bowie Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Mercer								
MINE		Starr		PERMIT		384-1		DATE		8-10-66		7 1/2' QUADRANGLE		Grove City								
COAL(S) REPORTED				Lower and Upper Clarion ?																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						-ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE		THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T	28' - 32'																					
8		cover																Soil.				
7	7'+	Ls																Vanport.				
6	0' - 2'	Cl sh			U	N5												Beds 1/8" - 1/4"; hackly.				
5	2' - 6'	Sh			U	N1												Fissile; beds 1/32" - 1/8"; brachiopods 3' from tom.				
4	1' 0"	Coal		0-12	S	N1												Weathered. Upper Clarion coal.				
3	7' 0"	Ss			S	N6												Beds 1/2" - 3"; mica, c; very fine- to fine-grained clay matrix; dark minerals and clay galls, r; aceous material, r. Grades upward to Cl.				
2	8' 0"	Cl sh			L	N5																
1	2' 10"	Coal	0' 5"	29-34	S	N1			+		+	D	2.3	32.2	57.8	7.7	0.89	13090	Bony.			
		Sh	0' 1"																Parting; dark			
		Coal	2' 4"	0-28		N1		+			+	+	MD	2.1	32.5	61.5	4.0	1.16	13550	Thin Sh partings.		
													2.1	32.5	60.9	4.6	1.12	13480	Seam average of 14-C-1, Lower Clarion ? coal.			

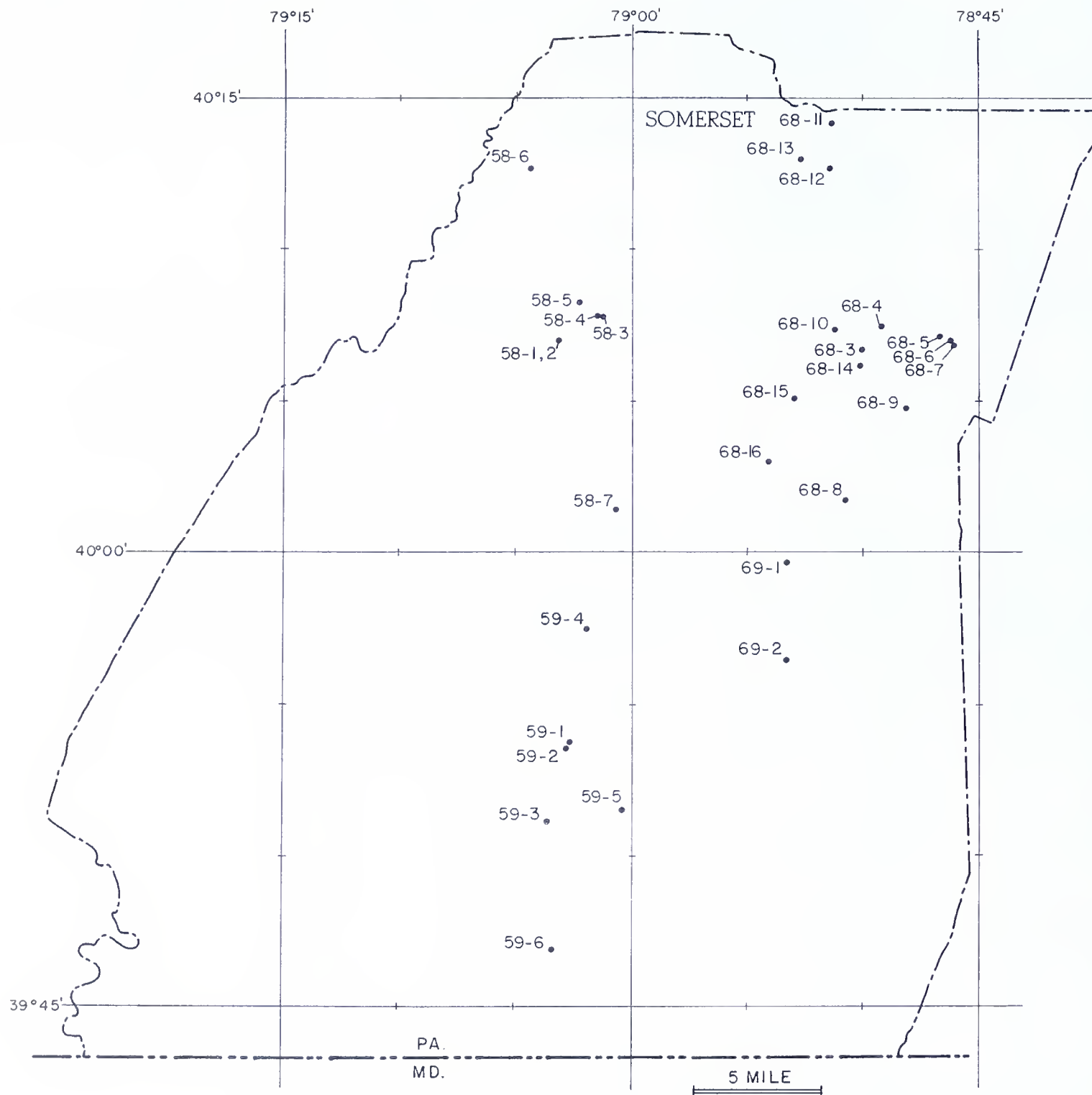
STATION NO.	14-2	LAT °N.	41°06'44"	COUNTY	Mercer	WEATHERING	fresh	JOINTING	N45°E, N60°W.
AL SAMPLE NO.(S)		LONG °W.	80°06'59"	TWP.	Liberty	COMMENTS			
COMPANY	Turner Bros. Constr. Co.	GEOLOGIST	wee	15' QUADRANGLE	Mercer				
IE	McCoytown # 6	PERMIT	19-4A3	DATE	5-25-66	7 1/2' QUADRANGLE	Slippery Rock		
AL(S) REPORTED	Brookville coal.								

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S					
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						A N T H R A X Y L O N				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% A B U N - D A N C E		T H I C K - N E S S												
						> 60	30 - 60	15 - 30	0 - 15							> 1/4"				1/8" - 1/4"
65'																				
15' 0"	cover																			Glacial material.
	Cl sh	5' 0"			U															Silty; beds 1/4" - 1/2"; hackly; weathered "lumpy" to 5Y 6/4.
	lss sh	8' 0"			G	N5, N7														Very thin laminae; mica l, c; plt. frgs, c; silt to fine-grained.
	lss st	19' 0"			G	N5, N7														Beds 6" to the southeast, and 2' to the southwest; mica l - 2, c; plt. frgs., c; silt to very fine-grained.
	St sh & Sts					N5													Note: lss st, and St sh/Sts are interbedded. Beds 1/2" - 3"; chippy, slabby; mica l, c; plt. frgs., leaves, c. Beds thicken to southeast, and thin to southwest.	
	St sh & Sts		12' 0"			G	N5												Note: St sh/Sts, and lss st are interbedded. Beds 1/4" - 3"; chippy, slabby; mica l, c; plt. frgs., leaves, c.	
	Cs & Cl sh	1' 0"			G	N2 - N3														Silty; beds 1/4" - 3"; chippy, slabby; plt. frgs., leaves, c.
45' 0"	Coal	2" - 6"	29-35		S	N1							D-MD							Slightly bony; blocky to irregular fracture; partings, r; pyrite specks.
2' 7" to 2' 11"	Coal	1' 4"	13-29		S	N1								B						Blocky fracture; partings, r; 0" - 1" Sts partings, 1/4", at top.
	Coal	1' 1"	0-13		S	N1								B						Blocky fracture; several discontinuous fine partings; 0" - 4" clay-fusain parting at top. Unit 2: Brookville coal.
2' 0" +	Uc				S	N5														Slightly silty; plt. frgs., <u>Stigmara</u> , a; hard; slickensides.

SITE/STATION NO.	14-9	LAT °N.	41°13'42"	COUNTY	Mercer	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	14-C-6	LONG °W.	80°06'56"	TWP.	Findley	COMMENTS	See Site 14-10 (mine permit 155-2A) for continua		
COMPANY	Buckeye Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	Mercer	of stratigraphy.			
MINE	Mercer # 2	PERMIT	155-2A	DATE	8-8-67	7 1/2' QUADRANGLE	Grove City		
COAL(S) REPORTED	Brookville.								

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE				THICK - NESS		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
Coals analyzed M/7-7-69																							
T	36' - 52'																						
5	30' - 38'	cover																Glacial outwash.					
4	0' - 8'	Cl sh				N4												Fissile, subfissile; beds 1/4" - 3"; chippy, hackly, rubbly; plt. frgs., spores, r; slightly silty upward; small irregular kaolin, r. Unit 4: A small remnant knoll under glacial outwash (unit 5).					
3	4' 11"	Coal	0' 5"	54-59	S	N1		+		+	VD	2.8	37.6	49.6	10.1	4.28		12536	Cubic to rough fracture; 1/2" fusain parting at bottom.				
		Coal	1' 2"	40-54		N1		+		+	VD	2.6	39.2	52.6	5.7	2.31		13504	Rough fracture; knife-edge fusain partings, c.				
		Coal	0' 3"	37-40		N1													Bone.				
		Coal	1' 3"	22-37		N1		+		+	D	1.7	36.8	52.0	9.6	1.36		12729	Rough fracture; fusain partings, c; bony near top.				
		pyrite	0' 2"																Parting.				
		Coal	0' 7"	13-20		N1		+		+	MB	2.2	39.9	53.4	4.4	1.41		13552	Cubic to rough fracture; fusain partings, c.				
		Coal	1' 1"	0-13		N1		+		+	MD	2.0	37.1	53.9	7.0	1.34		13141	Cubic fracture; fusain parting, r.				
											2.2	37.9	52.6	7.3	1.88		13117	Seam average of 14-C-6, Brookville coal.					
2	0' 10"	Cl sh	0' 3"		S	N2													Subfissile; beds 1/4" - 1/2"; chippy, hackly.				
		pyrite & bone	0' 2"		S	N1																	
		Cl sh	0' 5"		S	N1 - N2													Coaly (vitrain bands, r); subfissile; beds 1/4" - 3"; hackly.				
1		Uc			S	N4													Very soft.				

SITE/STATION NO. 14-10		LAT °N. 41°13'46"		COUNTY Mercer		WEATHERING moderate		JOINTING												
LOCAL SAMPLE NO.(S)		LONG °W. 80°07'11"		TWP. Findley		COMMENTS *Survey identification: Scrubgrass (Upper Clarion) coal.														
COMPANY Buckeye Coal Co.		GEOLOGIST tmb		15' QUADRANGLE Mercer		See Site 14-9 (155-2A, mine permit) for preceding stratigraphy.														
MINE Mercer # 2		PERMIT 155-2A		DATE 8-8-67		7 1/2' QUADRANGLE Grove City														
LOCAL(S) REPORTED Brookville.*																				
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S					
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						A N T H R A X Y L O N						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE														
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
INTERVAL (TOTAL)																				
1	24' - 41'																			
5	15' 0"	cover																Glacial outwash.		
4	6' - 10'	Ls			N6													Beds 1/2" - 3", 2' - 4'; <i>Phricodothyris</i> sp., <i>Spirifer</i> sp., horn corals, crinoids, and gastropods; micritic and skeletal. Vanport limestone.		
3	0" - 1' 2"	Coal		S	N1													Bony. Scrubgrass (Upper Clarion) coal.		
2	3' - 4'	Uc			N5													Very slightly silty; frag's. -1/2"; hackly; rootlets, r.		
1	15' 0"	Ss		S	N6													Beds 1/2" - 3"; slabby; mica; very fine-grained.		
		lss sh		G	N4												Fissile; beds 1/4" - 1/2"; chippy.			
		St sh		G	N4												Fissile; beds 1/4" - 1/2"; chippy.			
																		Unit 1: Grades upward, as shown.		



STATION NO. 58-1		LAT °N. 40°06'56"		COUNTY Somerset		WEATHERING		JOINTING											
SAMPLE NO.(S)		LONG °W. 79°03'01"		TWP. Jenner		COMMENTS													
COMPANY Coal Junction Coal Co.		GEOLOGIST tmb		15' QUADRANGLE Somerset															
Ash		PERMIT 45-2		DATE 6-24-66		7 1/2' QUADRANGLE													
(S) REPORTED Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S				
FSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON		ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH						
						% ABUN - DANCE	THICK - NESS												
						> 60	> 1/4"												
30 - 60	1/8" - 1/4"																		
15 - 30	1/32" - 1/8"																		
0 - 15	< 1/32"																		
28'																			
3'+	Cl sh			C	N5												Fissile; beds 1/4" - 1/2"; platy, hackly; siderite nodules?; Fe-stain. Upper contact with Coal (Unit 1, Site 58-2).		
1' 0"	Cl sh			G	N2 - N3												Fissile; beds 1/4" - 1/2"; platy, hackly.		
4' 0"	Ss			S	N6												Beds 1/2" - 2'; fine- to medium-grained, clay matrix, silica cement (siderite cement, r); dark minerals; semi-porous; carbonaceous.		
0' 6"	Sts			S	N3												Beds 1/4" - 3"; platy, hackly.		
5' 0"	Cl			S	5Y 4/1												Solid; rootlets, c; slickensides.		
1' 0"	Cl sh			G	N2												Beds 1/4" - 3"; platy; slickensides.		
5' 0"	lss st			G	N5												Beds 1/4" - 3"; mica, c; rootlets, a; worm borings in upper portion, a.		
1' 0"	lss st			G	N3 - N6												Fissile; beds 1/2" - 1'; plt. frgs.		
3' 0"	Cl sh			G	N4												Fissile; beds 1/4" - 3"; platy; mica, r; plt. frgs., r (in lower portion).		
2' 10 1/2"	"Bone"	0' 6"																	
	Coal	1' 2"	14 1/2 - 28 1/2		N1	+			+	+	MD						Cubic, rough fracture.		
	Clay & Pyrite	0' 1/2"															Parting.		
	Coal	1' 2"	0-14	S	N1	+			+		MD -D						Cubic, rough fracture; pyrite lenses, r. Unit 2: Lower Kittanning (B) coal.		
1'+	Uc			S	5YR 3/1												Solid; leaves; coaly laminae, r; slickensides.		

SITE/STATION NO.		58-2		LAT °N.		40°06'56"		COUNTY		Somerset		WEATHERING		JOINTING								
COAL SAMPLE NO.(S)				LONG °W.		79°03'01"		TWP.		Jenner		COMMENTS										
COMPANY		Coal Junction Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Somerset												
MINE		Ash		PERMIT		45-2		DATE		6-24-66		7 1/2' QUADRANGLE										
COAL(S) REPORTED		Middle Kittanning (C).																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S								
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE			THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T	34'																					
6		cover																				
5	5'+	St sh			C	5Y 6/1												Beds 3" - 1'; blocky, hackly.				
4	10' 0"	Cl sh			G	5Y 6/1												Beds 1/4" - 3"; platy; hackly.				
3	1' 0"	Cl sh			G	N3												Beds 1/32" - 1/2"; platy, chippy, hackly.				
2	15' 0"	Cl sh			S	N3 - N4												Fissile; beds 1/4" - 3"; platy; <u>Lingula</u> sp. in lower; limonite stain; coarser upward, with Ss laminae in upper 5'.				
1	3' 0"	Coal		0-36	S	N1												Bottom contact with Cl sh (Unit 11, Site 58-1). Middle Kittanning (C) coal. Partly covered.				

STATION NO.		58-3		LAT °N.		40°07'46"		COUNTY		Somerset		WEATHERING		JOINTING							
SAMPLE NO.(S)				LONG °W.		79°01'13"		TWP		Jenner		COMMENTS									
COMPANY		Alumbaugh Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Somerset											
IN Goden strip		PERMIT 84-2		DATE		6-23-66		7 1/2' QUADRANGLE													
(S) REPORTED		Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A														C O A L C H E M I C A L A N A L Y S E S				C O M M E N T S			
SS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)	ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH									
	% ABUN- DANCE																				
	> 60												30 - 60	15 - 30	0 - 15	> 1/4"					1/8" - 1/4"
43'																					
2' 0"	Uc					N7 - N8												Solid; rootlets, a.			
5' 0"	Sts & Ss				S	N3 - N5												Beds 3" - 1'; silt and very fine-grained (coarser upward).			
2' 0"	Cl				G	N2												Beds 3" - 1'; solid; rootlets, a; slickensides.			
1' 0"	Coal			0-12	S	N1												Beds 1/2" - 3"; interbedded with black Sh.			
9' 0"	lss st				S													Beds 1/2" - 1'.			
3' 6"	Bone	0' 7"																Grades upward from coal to bony Cl sh.			
	Coal	0' 11"	24-35			N1		+			+	+	MD					Cubic fracture.			
	Coal	2' 0"	0-24	S		N1		+			+		B					Cubic fracture. Unit 2: Lower Kittanning (B) coal.			
few "	Cl sh					N3												Beds 1/32" - 1/4"; chippy, hackly.			

SITE/STATION NO.		58-4		LAT °N.		40°07'48"		COUNTY		Somerset		WEATHERING		JOINTING					
COAL SAMPLE NO.(S)				LONG °W.		79°01'25"		TWP.		Jenner		COMMENTS				Entire highwall is mostly Cl sh and many units vertically gradational.			
COMPANY				Alumbaugh Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Somerset							
MINE		Goden strip		PERMIT		84-2		DATE		6-23-66		7 1/2' QUADRANGLE							
COAL(S) REPORTED				Upper Kittanning (C').															
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES					C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)			AIR DRYING LOSS (%)
							% ABUN - DANCE		THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15									
T	44'																		
15	6'+	Cl sh				5Y 6/1										Beds 1/4" - 1/2"; platy, hackly; weathered.			
14	1' 0"	Cl sh			G	N2										Silty in places; beds 1/32" - 1/4"; chippy.			
13	1' 0"	Cl			S	5Y 7/2										Extremely friable; dry.			
12	1' 0"	Cl sh			S	N2										Fissile; beds 1/32" - 1/4"; chippy.			
11	3' 0"	Cl sh			G	5Y 5/1 - N3										Fissile; beds 1/32" - 1/4"; chippy.			
10	0' 6"	Sh			S	N2										Fissile; beds -1/32" - 1/4"; chippy.			
9	1' 0"	Cl sh			S	N3										Beds 1/4" - 3"; solid; platy; rootlets; Fe-stain.			
8	few "	Cl sh			S	N3										Fissile; beds -1/32" - 1/2"; platy, chippy, hackly coaly laminae.			
7	2' 0"	Cl sh			S	5Y 6/1										Beds 1/4" - 1/2"; platy, hackly; branches.			
6	2' 0"	St sh			G	5Y 6/1										Hackly; branches; conchostracans?			
5	6' 0"	Cl sh			G	N4, 5Y 6/1										Fissile; beds -1/32" - 1/2"; platy, chippy, hackly			
4	13' 0"	Sts			G	5Y 6/1										Fissile; beds 1/32" - 1/2"; platy, chippy; mica; p frgs., r; with interlaminated Ss laminae, r.			
3	2' 0"	Cl sh			G	N4										Fissile; beds 1/32" - 1/4"; chippy; plt. frgs., r.			
2	5' ±	Coal		0-60	S	N1										Weathered. Upper Kittanning (C') coal.			
1	Few "	Uc			S	N3										Subfissile; beds 1/4"-1/2"; platy; Fe-stain.			

[illegible]

SITE/STATION NO.		58-6 (page 1)		LAT °N.		40°12'37"		COUNTY		Somerset		WEATHERING		JOINTING									
COAL SAMPLE NO.(S)				LONG °W.		79°04'23"		TWP.		Jenners		COMMENTS Operator called unit 3 "Big C".											
COMPANY M.F. Fetterolf Coal Co., Inc.				GEOLOGIST tmb		15' QUADRANGLE		Somerset															
MINE Keyserstown # 2		PERMIT 216-8		DATE 6-23-66		7 1/2' QUADRANGLE		-															
COAL(S) REPORTED		Upper Kittanning (C').																					
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN- DANCE		THICK- NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
		Coal	0' 1 1/2"	75-76 1/2			+			+			VB -B						Cubic fracture.				
		Cl sh	0' 9 1/2"			N2													Parting; plt. frgs., rootlets, c; more coaly later				
		Coal	1' 9"	44 1/2-65 1/2		N1	+			+	+		MB						Cubic fracture; pyrite laminae, c.				
		Clay	0' 1"																Parting; plastic.				
		Coal	0' 6"	37 1/2-43 1/2		N1	+			+	+		MB MD						Cubic fracture; Fe-stain.				
		Pyrite & Clay	0' 1/2"																Parting, discontinuous.				
		Coal	1' 1"	24-37		N1	+			+	+		D						Cubic, rough fracture.				
		Pyrite & Clay	0' 1"																Parting, discontinuous.				
3	6' 4 1/2"	Coal	1' 11"	0-23	S	N1	+	+		+	+		MD						Cubic fracture. Unit 3: Upper Kittanning (C') coal.				
2	0' 9"	Cl			S	10YR 6/2													Fissile; beds -1/32"-1/8"; plt. frgs., r; semi-plastic.				
1	2'+	Uc			G	10YR 5/6													Solid; plastic.				

STATION NO.	58-6 (page 2)	LAT °N.	40°12'37"	COUNTY	Somerset	WEATHERING	JOINTING
CL SAMPLE NO.(S)		LONG °W.	79°04'23"	TWP.	Jenners	COMMENTS	Operator called unit 3 "Big C".
PANY M.F. Fetterolf Coal Co., Inc.		GEOLOGIST	tmb	15' QUADRANGLE	Somerset		
Keyserstown # 2	PERMIT 216-8	DATE	6-23-66	7 1/2' QUADRANGLE	-		
CL(S) REPORTED	Upper Kittanning (C').						

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S			
D I S S U N I T	L I T H O L O G Y	I N T E R V A L (S U B - U N I T)	C O A L B E N C H E S C U M U L A T I V E , I N I N C H E S	C O N T A C T (U P P E R)	C O L O R (M U N S E L L)	C O A L							P R O X I M A T E (%)				B R I T I S H T H E R M A L U N I T S	
						A N T H R A X Y L O N						A T T R I T U S L U S T E R	M O I S T U R E	V O L A T I L E	F I X E D C A R B O N	A S H		
						% A B U N . D A N C E			T H I C K . N E S S									
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"							1/32" - 1/8"
65'																		
	cover																	
6'+	C1 sh			C	N3 - N6													Fissile; beds 1/32" - 1/2"; platy, chippy; weathered.
3" - 6"	Coal		0-6	S	N1													Very "dirty"; clay partings, c.
0' 3"	C1 sh			S	N4													Silty in places; solid; rootlets, r.
1' 0"	C1 sh			G	N3													Fissile; beds -1/32" - 1/4"; splintery, chippy; siderite nodules, r; Fe-stain, a; coaly laminae.
10' 0"	C1 sh			G	N4													Silty in places; solid; rootlets, r.
10' 0"	lsc sh			G	N4													Fissile; beds 1/4" - 3"; platy.
17' 0"	Sts				N3 - N4													Fissile; beds 1/4" - 1/2"; platy; mica.
	Ss			G	N7													Fissile; beds 1/2" - 2'; ripple marks; mica; fine- to medium-grained, silica cement (siderite cement?), dark minerals, semi-permeable. Unit 5: Interlaminated and/or interbedded.
11' 0"	Ss				N6													Beds 1/2" - 1'; fine-grained, clay matrix, carbonaceous material.
	lsc sh			G	N2 - N4													Beds 1/4" - 3"; platy; mica. Unit 4: Interbedded; more Ss than lsc sh.

SITE/STATION NO.		58-7 (page 1)		LAT °N.		40°01'23"		COUNTY		Somerset		WEATHERING		slight		JOINTING							
COAL SAMPLE NO.(S)		58-C-5, -6		LONG °W.		79°00'36"		TWP.		Somerset		COMMENTS											
COMPANY		Denise Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		Somerset													
MINE		Arnida # 1		PERMIT		223-1		DATE		7-10-68		7 1/2' QUADRANGLE		-									
COAL(S) REPORTED		Lower Freeport (D).																					
S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES					C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
Coals analyzed M/7-25-69																							
2	2' 4"	Coal	1' 8"	8-28	S	N1	+				+	+	+	B- VB	1.1	17.5	73.0	8.4	0.62	13651	Splintery fracture; fine partings, c.		
		Fusain	0" - 1"																		Parting, persistent.		
		Coal	0' 8"	0-8	S	N1	+				+	+	+	B- VB	1.1	17.7	66.1	15.1	0.54	12631	Splintery fracture; fine partings, c.		
																1.1	17.6	71.0	10.3	0.60	13359	Seam average of <u>58-C-5</u> , Lower Freeport (D) coal.	
1		Uc			S	N4																	

TE/STATION NO. 58-7 (page 2)		LAT °N. 40°01'23"		COUNTY Somerset		WEATHERING slight		JOINTING												
COAL SAMPLE NO.(S) 58-C-5, -6		LONG °W. 79°00'36"		TWP. Somerset		COMMENTS														
COMPANY Denise Coal Co.		GEOLOGIST wee		15' QUADRANGLE Somerset																
NE Arnida # 1		PERMIT 223-1		DATE 7-10-68		7 1/2' QUADRANGLE -														
COAL(S) REPORTED Lower Freeport (D).																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S						
GROSS UNIT	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN-DANCE		THICK-NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
52' - 58'																				
11'+	lss sh				5Y 5/2														Fissile; beds 1/2" - 3"; slabby; 1" siderite nodules, r.	
2' 0"	Ss			G	5Y 6/2 - N7														2 beds 1' thick; slabby; fine- to medium-grained, clay matrix, silica cement, dark minerals.	
1' 6" - 3'	St sh			G	5Y 4/2														Clayey; fissile; beds 1/4" - 1/2"; chippy.	
1' 6" - 2' 6"	Cl sh			G	N2														Fissile; beds 1/32" - 1/8"; chippy, hackly; a, ferruginous with many interbedded limonite (siderite) nodules to 4".	
4' - 6'	St sh			G	5Y 4/2														Fissile; beds 1/4" - 3"; hackly, rubbly; plt. frgs., c; possibly Sts.	
1' 6"	Cl sh			G	N5														Fissile; beds 1/32" - 1/8"; chippy.	
	St sh-Sts	6' 6"		G	5Y 4/2-5Y 5/2														Fissile, beds 1/8" - 3"; chippy, slabby, hackly, rubbly; plt. frgs., c; possibly Sts.	
	Ss	1' 6"		G	N5 - N6														Clayey; subfissile; beds 1" - 6"; rubbly; plt. frgs., leaves, r; silt to very fine-grained, clay matrix.	
	lss st	2' 0"		G	N3 - N5														Subfissile; beds 1/2" - 3"; rubbly; siderite to 1"; plt. frgs., leaves, c.	
	Sts - Sh	6' 0"		G	N3														Fissile; beds 1/4" - 3"; chippy, hackly, rubbly; siderite to 1"; plt. frgs., leaves, a; locally St sh.	
	Sts - lss st	7' 0"		G	N3 - N6														Fissile; beds 1/4" - 3"; chippy, hackly, rubbly; siderite to 1"; plt. frgs., leaves, a; locally lss st.	
0' 8"	Coal		0-8	S	N1	+				+	M3	1.2	19.0	71.8	8.1	0.57	13695		Granular; fine partings, a. 58-C-6, Lower Freeport (D) coal.	
1' 6" - 2' 6"	Cs			S	N3 - N2														Silty; subfissile; beds 1/8" - 3"; chippy, hackly, rubbly; plt. frgs., leaves, a; including <u>Neuropteris</u> sp. Unit may be locally Cl sh; appears to thicken to west.	

SITE/STATION NO.	59-1	LAT °N.	39°53'47"	COUNTY	Somerset	WEATHERING	JOINTING
COAL SAMPLE NO.(S)	59-C-20	LONG °W.	79°02'32"	TWP.	Brothers Valley	COMMENTS	A major slump structure involving extreme contorti
COMPANY	Decker Construction Co.	GEOLOGIST	tmb	15' QUADRANGLE	Meyersdale	of the strata was described just west of this measured section.	
MINE	Shober	PERMIT	2-1 (c)	DATE	6-14-66	7 1/2' QUADRANGLE	
COAL(S) REPORTED	Upper Freeport (E) and rider coal.					The field description of this structure is in the open files of the Pa. Geological Survey.	

S T R A T I G R A P H I C										D A T A				COAL CHEMICAL ANALYSES						C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						1/32" - 1/8"				
T	29'																					
8	8' +	Ss				10YR 7/4													Beds 1/2" - 2'; mica, c; fine-grained, good sorting, subangular, clay matrix, dark minerals; permeable; imbricated; cuts into underlying sediments.			
7	1' 6"	Coal		0-18	S	N1													Not mined. Upper Freeport (E) rider coal.			
6	2' 0"	Uc			S	N7													Rubbly; <u>Stigmara</u> .			
5	10' 0"	Cl sh				N4													Fissile; beds 1/32" - 3"; platy, chippy, hackly.			
		lss st			G	N7												Fissile; beds 1/32" - 3"; platy, chippy; ripple marked; plt. frgs. (tiny leaves), a; very fine-grained, subangular; clay matrix, dark minerals; carbonaceous material.				
4	2' 9"	Cl sh			G	N4													Fissile; beds 1/32" - 3"; platy, chippy, hackly.			
3	1' 0"	Sh			G	N3													Fissile; beds 1/32" - 1/2"; platy, chippy, blocky, hackly.			
2	2' 11"	Coal	1' 8"	15-35		N1	+				+	+		MD					Cubic fracture.			
		Coal	1' 3"	0-15	S	N1	+				+	+		MD				Cubic fracture; seems to be more Fe-rich. Unit 2: <u>59-C-20</u> , Upper Freeport (E) coal (no sample).				
1	0' 3" +	Cl sh			S	N4													Beds 1/4" - 1/2"; platy, hackly.			

[illegible]

SITE/STATION NO.		59-2 (page 2)		LAT °N.		39°53'31"		COUNTY		Somerset		WEATHERING		JOINTING						
COAL SAMPLE NO(S)		59-C-14, -15, -17		LONG °W.		79°02'43"		TWP.		Brothers Valley		COMMENTS		Massive slump block in this strip.						
COMPANY		Decker Const. Co.		GEOLOGIST		tmb		15' QUADRANGLE		Meyersdale										
MINE		Shober		PERMIT		2-1-C		DATE		6-21-66		7 1/2' QUADRANGLE		-						
COAL(S) REPORTED		Upper Freeport (E) rider.																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN- DANCE	THICK- NESS												
								> 60	30 - 60	15 - 30						0 - 15				
T	31'																			
12		cover																Soil.		
11	10'+	lsc sh			S	N4, 5GY 6/1												Beds 1/4" - 3"; platy, hackly; scattered siderite 3" - 6"; limonite stain in upper half due to weathering.		
10	1' 4"	Coal	0' 10"	6-16		N1	+				+	+		D				Cubic fracture; pyrite partings, r.		
		Coal	0' 6"	0-6	S	N1	+					+		D				Cubic, rough fracture. Unit 10: 59-C-17, Upper Freeport (E) rider coal. Not sampled.		
9	few "	Sh			G	N2												Fissile; beds -1/32" - 1/8"; plt. frgs., a; pyrite.		
8	0' 8"	Uc			G	N4												Beds 1/2" - 3"; hackly; rootlets, a.		
7	6' 0"	Ss, Sts Sh			S													Fissile; beds 1/32" - 3"; platy, chippy; plt. frgs., more than Unit 4; less Ss than Unit 4.		
6	2' 6"	Coal	1' 6"	12-30		N1	+				+	+		MB				Cubic fracture; pyrite to 1/2" thick, r.		
		Cl sh	0' 3"															Parting.		
		Coal	0' 9"	0-9		N1	+				+			MD				Cubic fracture. Unit 6: 59-C-15, Upper Freeport (E) rider coal. Not sampled.		
5	1' 0"	Uc			G	N3												Solid; rootlets, a; slickensides, a.		
4	7' 0"	Ss				N7												Fissile; beds 1/4" - 3"; platy; very fine-grained, clay matrix, silica cement.		
		Cl sh				N4												Fissile; beds 1/32" - 1/2"; platy, chippy. Unit 4: Interbedded; imbricated beds dip E not more than a few degrees.		

/STATION NO.		59-3		LAT °N.		39°51'09"		COUNTY		Somerset		WEATHERING		fresh		JOINTING			
L SAMPLE NO.(S)				LONG °W.		79°03'37"		TWP.		Summit		COMMENTS							
PANY		Decker Constr. Co.		GEOLOGIST		adq		15' QUADRANGLE		Meyersdale									
Silver Valley		PERMIT 2-2 (C)		DATE		8-3-66		7 1/2' QUADRANGLE		-									
L(S) REPORTED		Silver Valley or Upper Freeport (E).																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S					
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
						% ABUN - DANCE													
						> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
35'																			
0" - 6"	Coal																Blossom.		
10' 0"	Sh			S	N6												Silty; beds 1/2" - 3"; weathered.		
0" - 6"	Sh			S	N1												Carbonaceous; weathered.		
8' 0"	St sh			S	N6												Beds 3" - 1'.		
14' 0"	Cs			G	N5												Beds 1/2" - 3"; hackly; conchostracans.		
2' 4"	Coal	0' 8"	20-28	S	N1				+			+	MD				Bony.		
	Coal	1' 8"	0-20		N1		+	+			+	+	MB MD				Pyrite, r. Unit 2: "Silver Valley" or Upper Freeport (E) coal.		
	Uc			S													Silty.		

SITE/STATION NO.		59-4		LAT °N.		39°57'29"		COUNTY		Somerset		WEATHERING		JOINTING				
COAL SAMPLE NO.(S)				LONG °W.		79°01'57"		TWP.		Bros. Valley		COMMENTS						
COMPANY				Croner Inc.		GEOLOGIST		tmb		15' QUADRANGLE		Meyersdale						
MINE		Ridge strip		PERMIT		148-4		DATE		6-13-66		7 1/2' QUADRANGLE						
COAL(S) REPORTED				Upper Freeport (E).														
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)			
							% ABUN - DANCE	THICK - NESS										
																> 60		
T	35' - 50'																	
9	5' 0" - 15' 0"	Ss				5YR 7/4										Beds 3" - 1'; mica, r; medium-grained, good sorting, angular, silica cement, dark minerals, clay galls; more lateral continuity than Unit 8.		
8	4' 6" - 25' 0"	Ss			G	5YR 7/4										Beds 2' - 4'; mica, r; medium-grained, good sorting, angular, silica cement, dark minerals, clay galls; permeable, good porosity; laterally discontinuous. Cuts down through Units 4 - 7 laterally.		
7	11' 0"	Sts - Ss			U											Fissile; beds 1/4" - 1/2"; platy; more Sts than Ss. Interbedded.		
6	2' 0"	Ss			G	N7										Beds 1/2"-1'; current ripple marks; fine-grained, angular, clay matrix; permeable; carbonaceous material.		
5	2' 0"	St sh			G	N5										Fissile; beds 1/4"-1/2"; platy; plt. frgs., interlaminated with thin Ss laminae.		
4	2' 9"	Ss			G	N7										Beds 1/2"-1'; mica, r; fine-grained, excellent sorting, angular, clay matrix; permeable; carbonaceous material; thickness varies laterally.		
3	3' 3"	Cl sh			S	N4										Fissile; beds -1/32"-1/8"; papery; plt. frgs.; thin coaly Ss stringer at top.		
2	3' 9"	Coal	2' 4"	17-45		N1	+				+	+	+	MB		Cubic, rough fracture; vitrain appears to be thinner bottom.		
		Pyrite	0' 3"			N1										Parting; black, pyritic; bone?		
		Coal	1' 0"	2-14		N1	+				+			MB		Cubic fracture; peacock luster.		
		Pyrite	0' 2"		S	N1										Parting; black, pyritic; bone? Unit 2: Upper Freeport (E) coal.		
1		Uc																

WELL/STATION NO.	59-5	LAT °N.	39°51'27"	COUNTY	Somerset	WEATHERING	fresh	JOINTING	
WELL SAMPLE NO.(S)		LONG °W.	79°00'20"	TWP.	Brothers Valley	COMMENTS	Very rolly floor.		
COMPANY	Ponfeigh Smokeless Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Meyersdale				
WELL	Bluelick #2	PERMIT	169-1C	DATE	8-3-66	7 1/2' QUADRANGLE	-		
WELL(S) REPORTED	Sewickley or "No. 1",								

S T R A T I G R A P H I C D A T A													C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S			
CROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						A N T H R A X Y L O N							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% A B U N - D A N C E				T H I C K - N E S S											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"									
36'																					
12' 0"	Ss				N7													Beds 1/2" - 3"; mica, r; very fine- to fine-grained; clay matrix, c; dark minerals, r.			
20' 0"	St sh			U	N1 - N3													Beds 1/8" - 1/2"; hackly.			
3' 9"	Coal	3' 1"	8-45	S	N1	+	+			+	+		MD					Thin Sh partings.			
	Sh	0' 1/2"			N1													Parting; tough.			
	Coal	0' 7 1/2"	0-7 1/2		N1		+				+	+	D					Bony. Unit 2: Sewickley coal.			
	Uc			S																	

SITE/STATION NO.	59-6 (page 1)	LAT. °N.	39°46'57"	COUNTY	Somerset	WEATHERING	JOINTING
COAL SAMPLE NO.(S)		LONG °W.	79°03'27"	TWP.	Elk Lick	COMMENTS	Recovering old stumps and pillars from old deep mine (unit 2), called "Big Seam" by miner
COMPANY	Sanner Bros. Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	Meyersdale		
MINE	Shaffer strip	PERMIT	308-4	DATE	6-21-66	7 1/2' QUADRANGLE	-
COAL(S) REPORTED	Pittsburgh coal.						

S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES					C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE				THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"	
		Coal	2' 4"	100-128		N1																		
			6" - 8"																					
		Coal	4' 0"	44-92		N1												Parting.						
			0' 8"																					
		Coal	0' 3"	33-26														Parting.						
		Coal	1' 8"	13-33		N1												Thin vitrain stringers.						
		Cl sh	0' 2"															Parting.						
2	10' 8"	Coal	0' 11"	0-11	S	N1												Unit 2: Pittsburgh coal.						
1	Few "+	Cl sh			S	N3												Silty; beds $\frac{1}{4}$ " - $\frac{1}{2}$ "; platy, hackly; rootlets, a.						

TE/STATION NO.	59-6 (page 2)	LAT °N.	39°46'57"	COUNTY	Somerset	WEATHERING	JOINTING
COAL SAMPLE NO.(S)		LONG °W.	79°03'27"	TWP.	Elk Lick	COMMENTS	Recovering old stumps and pillars from old deep mine (unit 2), called "Big Seam" by miner.
COMPANY	Sanner Bros. Coal Co.	GEOLOGIST	tmb	15' QUADRANGLE	Meyersdale		
LINE	Shaffer strip	PERMIT	308-4	DATE	6-21-66	7 1/2' QUADRANGLE	-
COAL(S) REPORTED	Pittsburgh coal.						

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S								
ROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
							ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH								
							% ABUN - DANCE									THICK - NESS							
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"	1/8" - 1/4"	1/32" - 1/8"					< 1/32"
	60'																						
1	6'+	Cl sh				N3														Fissile ; beds 1/32" - ½"; platy, chippy; weathered.			
1	4' 0"	Coal		0-48	C	N1														Weathered. Called "four foot bed," or Redstone coal.			
1	1' 6"	Cl sh			S	N7														Silty; beds ½" - 3"; mica, c; finer upward.			
1	1' 0"	St sh			G	N6														Beds ½" - 1'; hackly; rootlets, a.			
2	10' 0"	Ss			G	N6 - N8														Fissile; beds ½" - 3"; hackly; mica, c; branches, r; very fine-grained, excellent sorting, clay matrix; permeable, good porosity; "red pink" stain.			
3	6' 0"	Cl sh			G	N4														Fissile; beds ¼" - ½"; platy, hackly; Fe-stain.			
4	3' 0"	lss sh			G	N7 - N8 N4														Fissile; beds ¼" - ½"; platy; mica; plt. frgs.; fine-grained, clay matrix.			
5	1' 0"	Ss			G	N8														Fissile; beds 1/4"-1/2"; chippy; mica, c; very fine-grained, clay matrix; gradational bedding.			
5	3' 0"	Cl sh			G	5YR 4/1														Fissile; beds -1/32"-1/2"; platy, chippy; mica, r; plt. frgs., Fe-stain.			
6	1' 9"	Ss			S	N8														Fissile; beds 1/32" - ¼"; solid; chippy; one massive bed; mica, c; very fine-grained, clay matrix.			
7	11' 0"	lss st			S	N4														Fissile; beds -1/32"-1/2"; platy, chippy; mica, r; plt. frgs., Fe-stain.			

SITE NO. 68-3

WELL/STATION NO.	68-4	LAT °N.	40°07'28"	COUNTY	Somerset	WEATHERING	fresh	JOINTING	
WELL SAMPLE NO(S)		LONG °W.	78°49'16"	TWP.	Shade	COMMENTS			
COMPANY	Constantino Coal Co.	GEOLOGIST	adg	15' QUADRANGLE	Windber				
WELL #	9	PERMIT	211-4	DATE	8-2-66	7 1/2' QUADRANGLE	-		
WELL(S) REPORTED	Upper Kittanning (C')?								

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S							
WELL NUMBER	CROSS UNIT	L I T H O L O G Y	INTERVAL (SJB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
							A N T H R A X Y L O N						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
1	25'																					
5	3' +	Sh				N1													Leaves, a. Weathered.			
5	0' 6"	Coal		0-6															Weathered.			
4	14' 0"	St sh				N6													Beds 1/4" - 1/2"; hackly. Ss interbeds near top.			
3	3' 0"	Cl sh			G	N5													Beds 1/4" - 1/2"; hackly; plt. frgs.,c; lower 2" is Sh, N1.			
2	3' 7"	Coal	0' 6"	37-43	S	N1	+			+	+		MD						Thin Sh partings.			
		Coal	0' 7"	30-37		N1		+	+		+	+		D					Slightly bony.			
		Coal	2' 4"	2-30		N1	+	+		+	+		MD									
		Bone	0' 2"																			
																			Unit 2: Upper Kittanning (C')? coal.			
	0' 4" +	Uc			S	N5													Non-fissile.			

SITE/STATION NO.		68-5		LAT °N.		40°07'08"		COUNTY		Somerset		WEATHERING		Fresh		JOINTING							
COAL SAMPLE NO(S)				LONG °W.				78°46'34"				TWP.		Shade				COMMENTS					
COMPANY				H. E. Goden				GEOLOGIST		adg		15' QUADRANGLE		Windber									
MINE		PERMIT		216-3		DATE		8-4-66		7 1/2' QUADRANGLE													
COAL(S) REPORTED				Middle Kittanning (C)?																			
S T R A T I G R A P H I C										D A T A		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH	
							% ABUN - DANCE			THICK - NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"											1/32" - 1/8"
T	52'																						
8	24' 0"	St sh				N5												Beds 1/4" - 1/2"; few thin Ss interbeds near top.					
7	1' 0"	Cl sh			L	N5												Fissile; beds 1/4" - 1/2"; pelecypods.					
6	0' 1"	Sh			S	N1												Fissile; beds 1/32" - 1/8"; platy.					
5	2' 2"	Coal	1' 3"	11-26	S	N1		+		+	D							Thin Sh partings. Weathered.					
		Sh	0' 1"															Dark; tough.					
		Coal	0' 10"	0-10		N1		+		+	D							Slightly bony. Unit 5: Middle Kittanning (C) ? coal.					
4	5' 0"	Uc			S	N6												Solid; <u>Stigmara</u> ; 6" bn. Cl sh at top.					
3	16' 0" +	St sh			L	N5												Fissile; beds 1/8" - 1/4"; chippy; siderite nodules; <u>Lingula</u> sp.					
2	4'+	cover																Covered interval.					
1		Coal																Not seen. Lower Kittanning (B) coal.					

E/STATION NO. 68-6		LAT °N. 40°06'56"		COUNTY Somerset		WEATHERING fresh		JOINTING													
L SAMPLE NO.(S)		LONG °W. 78°46'11"		TWP. Shade		COMMENTS															
COMPANY H. E. Goden		GEOLOGIST adg		15' QUADRANGLE Windber																	
PERMIT 216-3		DATE 8-4-66		7 1/2' QUADRANGLE -																	
L(S) REPORTED Upper Kittanning (C').																					
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
						% ABUN - DANCE		THICK - NESS													
						> 60	30 - 60	15 - 30	0 - 15						> 1/4"	1/8" - 1/4"	1/32" - 1/8"				
39' - 40'																					
35' 0"	St sh				N5														Beds 1/4" - 1/2"; hackly; plt. frgs., c.		
0' - 1'	Cl sh			L	N3 - N4														Fissile; beds 1/4" - 1/2"; plt. frgs., c; slickensides.		
3' 1 1/2"	Coal	0' 2"	35 1/2 - 37 1/2	S	N1	+	+			+	+		MD								
	Sh	0' 1 1/2"																	Dark.		
	Coal	0' 4"	31-35		N1		+				+		D						Partings of "soft" Sh.		
	Bone	0' 2"																			
Coal	2' 5"	0-29		N1		+	+			+	+		MD						Unit 1: Upper Kittanning (C') coal.		

SITE/STATION NO.		68-7		LAT °N.		40°06'51"		COUNTY		Somerset		WEATHERING		fresh		JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COAL SAMPLE NO.(S)				LONG °W.				78°46'01"				TWP.		Shade				COMMENTS		Coal thins at west end of strip.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
COMPANY				H. E. Goden				GEOLOGIST		adg		15' QUADRANGLE		Windber																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
MINE		PERMIT		216-3		DATE		8-3-66		7 1/2' QUADRANGLE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
COAL(S) REPORTED				Lower Freeport (D).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
S T R A T I G R A P H I C																		D A T A																		COAL CHEMICAL ANALYSES																		C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
GROSS UNIT		LITHOLOGY		INTERVAL (SUB - UNIT)		COAL BENCHES CUMULATIVE, IN INCHES		CONTACT (UPPER)		COLOR (MUNSELL)		COAL								PROXIMATE (%)				SULFUR (%)		AIR DRYING LOSS (%)		BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
NUMBER												INTERVAL (TOTAL)		ANTHRAXYLON				ATTRITUS LUSTER		MOISTURE		VOLATILE										FIXED CARBON		ASH																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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E/STATION NO. 68-8		LAT °N. 40°01'45"		COUNTY Somerset		WEATHERING fresh		JOINTING												
AL SAMPLE NO.(S)		LONG °W. 78°50'43"		TWP. Stony Creek		COMMENTS Highwall inaccessible.														
MPANY See Comments		GEOLOGIST adg		15' QUADRANGLE Windber																
IE Glessner strip		PERMIT 222-6		DATE 8-2-66		7 1/2' QUADRANGLE -		Name of Company: P.B.S. Coal, Inc., or R.H. Glessner, Jr.												
AL(S) REPORTED		Lower Freeport (D), Upper Freeport (E)?																		
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES				C O M M E N T S						
ROSS UNIT INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN- DANCE														
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
42'																				
	cover																	Soil.		
2'+	Coal		0-24		N1													Weathered. Upper Freeport (E) ? coal.		
4' 0"	Cl sh			S														Grades to Uc at top.		
18' 0"	lss sh			L	N6													Beds 1/2" - 3"; silt to very fine-grained; Sh is sandy.		
0' 4"	Coal		0-4	S	N1													Lower Freeport (D) rider coal.		
13' 0"	lss sh			S														Beds 1/4"-1/2"; mica, r; plt. frgs., r; silt to very fine-grained; clay matrix, r; dark minerals, c; carbonaceous material, c.		
3' 4 1/2"	Coal	0' 7"	33 1/2-40 1/2	S	N1	+	+			+	MD							Thin Sh partings.		
	Bone	0' 1 1/2"																		
	Coal	2' 6"	2-32		N1	+	+			+	MB							Pyrite, r.		
	Bone	0' 2"																Unit 2: Lower Freeport (D) coal.		
0' 6'+	Uc			S																

SITE/STATION NO.		68-9 (page 1)		LAT °N.		40°04'45"		COUNTY		Somerset		WEATHERING		JOINTING						
COAL SAMPLE NO.(S)				LONG °W.		78°48'10"		TWP.		Shade		COMMENTS				Highwall extremely weathered.				
COMPANY				P.B.S. Coal Co.		GEOLOGIST		tmb		15' QUADRANGLE		Windber								
MINE		Stoddard		PERMIT		222-7		DATE		6-16-66		7 1/2' QUADRANGLE								
COAL(S) REPORTED				Lower Freeport (D).																
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH					
							% ABUN - DANCE		THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15						> 1/4"				
2	2' 1 1/2"	Coal	0' 6"	19 1/2 - 25 1/2		N1	+					+	+	B					Cubic fracture.	
		Pyrite & Clay	0' 1/2"																Parting, discontinuous.	
		Coal	1' 7"	0-19	S	N1	+	+				+	+	MB MD					Cubic fracture; thin anthraxylon bands in lower 3". Unit 2: Lower Freeport (D) coal.	
1	few "	Uc			S	5Y 4/1													Beds 1/2" - 3"; rubbly; rootlets, a; slickensides, c.	

STATION NO. 68-9 (page 2)	LAT °N. 40°04'45"	COUNTY Somerset	WEATHERING	JOINTING
L SAMPLE NO(S)	LONG °W. 78°48'10"	TWP. Shade	COMMENTS	Highwall extremely weathered.
PANY P.B.S. Coal Co.	GEOLOGIST tmb	15' QUADRANGLE Windber		
E Stoddard	PERMIT 222-7	DATE 6-16-66	7 1/2' QUADRANGLE	
L(S) REPORTED	Lower Freeport (D).			

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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SITE/STATION NO.		68-10		LAT °N.		40°07'20"		COUNTY		Somerset		WEATHERING		slight		JOINTING							
COAL SAMPLE NO.(S)				LONG °W.				78°51'14"				TWP.		Shade									
COMPANY				C. & P. Coal Co., Inc.				GEOLOGIST		adg		15' QUADRANGLE		Windber									
MINE		# 2		PERMIT		298-2		DATE		8-2-66		7 1/2' QUADRANGLE		-									
COAL(S) REPORTED				Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE				THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
T	34'																						
8		cover																Soil.					
7	5'+	Sh																Weathered.					
6	1' 0"	Coal		0-12	S	N1												Blossom.					
5	2' 0"	C1 sh			S	N7												Beds 1/8" - 1/4".					
4	20' 0"	C1 sh			L	N3												Beds 1/8" - 1/4"; hackly; siderite nodules; <u>Lingula</u> sp coarser upward.					
3	1' 0"	Sh			S	N1												Nonbanded; beds 1/8" - 1/4"; equant.					
2	4' 8"	Bone	0' 1 1/2"		S																		
		Coal	0' 10"	44 1/2-54 1/2		N1		+			+	+	D					Bony; thin Sh partings.					
		Bone	0' 1"																				
		Sh	0' 3 1/2"															Parting; bony.					
		Coal	2' 10 1/2"	5 1/2-40		N1		+	+		+	+	MD					Parting.					
		Sh	0' 1 1/2"																				
		Coal	0' 3"	1-4		N1		+			+		MD										
		Bone	0' 1"															Unit 2: Lower Kittanning (B) coal.					
1	0' 6"+	Uc			S																		

WELL/STATION NO.	68-11	LAT °N.	40°14'09"	COUNTY	Somerset	WEATHERING	fresh	JOINTING	
CAL SAMPLE NO(S)		LONG °W.	78°51'28"	TWP.	Paint	COMMENTS	Operator indicated Middle Kittanning (C) coal to be 4'		
COMPANY	C.E. Peterson Coal Mng. Co., Inc	GEOLOGIST	adg	15' QUADRANGLE	Windber	6" thick. Fault through Middle Kittanning (C) at end of stripping			
NAME	Barbara Jean	PERMIT	325-1 (A)	DATE	7-29-66	7 1/2' QUADRANGLE	-	unable to find Middle Kittanning (C) coal in other block. 30'	
CAL(S) REPORTED	Lower Freeport (D).								interval to Lower Freeport (D) coal.

S T R A T I G R A P H I C D A T A																	COAL CHEMICAL ANALYSES					C O M M E N T S
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				BRITISH THERMAL UNITS				
						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)						
						% ABUN - DANCE											THICK - NESS					
						> 60	30 - 60	15 - 30	0 - 15										> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"
21'																						
	cover																Soil.					
6' 0"	Ss				N6												Beds 1/4" - 3"; mica, r; very fine-to fine-grained; clay matrix and dark minerals, r.					
8' 0"	lss st			L	N6												Beds 1/4" - 3"; mica, r; silt to very fine-grained; clay matrix and dark minerals, r.					
3' 0"	St sh			S	N5												Beds 1/4" - 1/2"; conchostracans.					
3' 6"	Coal	1' 1/2"	29 1/2-42	S	N1		+			+		MD					1/2" of bone at top.					
	Sh	0' 1"															Parting.					
	Coal	1' 10"	6 1/2-28 1/2		N1		+			+		D					Thin Sh partings.					
	Cl sh	0' 1"															Parting.					
3' 6"	Coal	0' 5 1/2"	0-5 1/2		N1		+	+			+	D					Unit 2: Lower Freeport (D) coal.					
0' 6 1/4	Uc			S																		

SITE/STATION NO.		68-12		LAT °N.		40°12'36"		COUNTY		Somerset		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)				LONG °W.		78°52'30"		TWP.		Paint		COMMENTS Operator noted that Lower Kittanning (B) coal has									
COMPANY		K.G. Richards Coal Co.		GEOLOGIST		adg		15' QUADRANGLE		Windber		been mined out here. 35' - 42' interval between Middle Kitt									
MINE		PERMIT 453-1		DATE		8-1-66		7 1/2' QUADRANGLE		-		ning (C) coal and Lower Freeport (D) coal. "There is no upper									
COAL(S) REPORTED		Middle Kittanning (C)?										Kittanning (C') coal around here," according to operator.									
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE		THICK - NESS												
							> 60	< 1/4"	> 1/8"	< 1/32"											
T	25'																				
4		cover																Soil.			
3	20' 0"	lss sh				N4												Beds 1/4" - 1'; foreset beds; mica, r; silt to very fine grained; clay matrix and dark minerals, r.			
2	0' 6"	cl sh			G	5YR 2/1												Fissile; beds 1/8" - 1/4"; platy; plt. frgs, a.			
1	4' 1 1/2"	Coal	1' 0"	37 1/2 - 49 1/2	S	N1	+		+	MD								Thin Sh partings.			
		Sh	0' 1/2"															Parting.			
		Coal	3' 0"	1-37		N1	+		+	MD											
		Bone	0' 1"															Unit 1: Middle Kittanning (C) ? coal.			

ITE/STATION NO. 68-13		LAT °N. 40°12'55"		COUNTY Somerset	WEATHERING	JOINTING
COAL SAMPLE NO(S)		LONG °W. 78°52'42"		TWP Paint	COMMENTS "There is no upper Kittanning (C') coal around here!"	
COMPANY K. G. Richards Coal Co.		GEOLOGIST adg	15' QUADRANGLE	Windber	35' - 42' interval between Lower Freeport (D) coal and Middle	
LINE	PERMIT 453-1	DATE 8-1-66	7 1/2' QUADRANGLE	-	Kittanning (C) coal. 30' - 32' interval between Lower Freeport	
COAL(S) REPORTED Lower Freeport (D).					(D) coal and Upper Freeport (E) coal.	

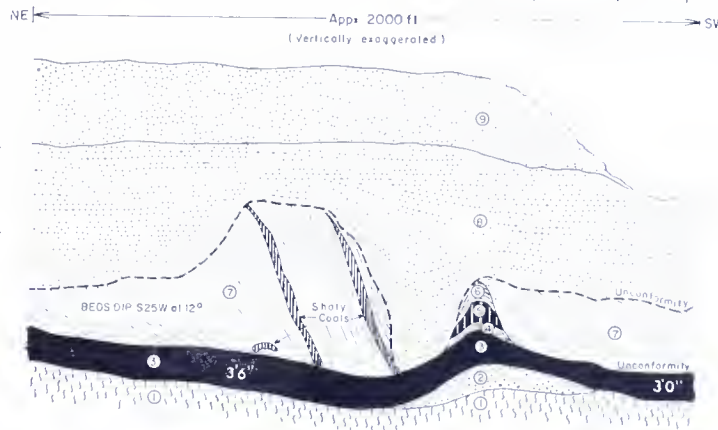
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S							
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE				THICK - NESS												
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
18' - 30'																						
	cover																		Soil.			
15' 0"	Ss				N7														Beds 3" - 1'; mica, r; very fine-grained; clay matrix, a; dark minerals, r.			
0' - 12'	St sh			U	N6														Beds 1/4" - 1/2". Apparently locally cut out by Unit 6 (Ss).			
2' 0"	Sh			S	N1														Beds 1/32" - 1/8"; hackly; conchostracans?			
7' 0"	St sh			S	N5														Beds 1/4" - 1/2"; plt. frgs., a; thin Ss laminae, r.			
0' 4"	Sh			S	N1														Beds 1/32" - 1/8"; equant; conchostracans?			
3' 9 1/2"	Coal	0' 11"	34 1/2-45 1/2	S	N1			+			+	+		MB								
	Sh	0' 2"																	Parting.			
	Coal	1' 8 1/2"	12-32 1/2		N1			+	+			+	+	MB					Pyrite, r.			
	Sh	0' 1"																	Parting.			
	Coal	0' 7 1/2"	3 1/2-11		N1			+				+		MD					Bone at bottom, r.			
	Sh	0' 1 1/2"																	Parting.			
	Coal	0' 2"	0-2		N1			+	+			+		MD					Unit 1: Lower Freeport (D) coal.			

SITE/STATION NO.		68-14		LAT °N.		40°06'06"		COUNTY		Somerset		WEATHERING		fresh		JOINTING							
COAL SAMPLE NO.(S)				LONG °W.				78°50'09"				TWP.		Shade				COMMENTS		Operator noted coal to be Upper Freeport (E), but			
COMPANY				Robert G. Long				GEOLOGIST		adg		15' QUADRANGLE		Windber				some call it Lower Freeport (D).					
MINE		Will		PERMIT		385-1		DATE		8-2-66		7 1/2' QUADRANGLE		-									
COAL(S) REPORTED												Upper Freeport (E)?											
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES						C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON								ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE																
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
T	30'																						
4	12' 0"	C1 sh				5Y 4/1												Beds 1/4" - 1/2"; hackly.					
3	6' 0"	Sts			S	N6												Beds 1/2" - 3"; hackly.					
2	10' 0"	C1 sh			G	N6												Silty; beds 1/4" - 1/2"; hackly.					
1	2' 9 1/2"	Coal	0' 11 1/2"	22-33 1/2	S	N1	+	+		+	+	MD						Thin Sh partings.					
		Sh	0' 2"			N1												Parting.					
		Coal	1' 8"	0-20		N1		+			+	MD						Slightly bony. Unit 1: Upper Freeport (E) ? coal.					

TE/STATION NO.	68-15	LAT °N.	40°05'04"	COUNTY	Somerset	WEATHERING	moderate	JOINTING:	N15°E, N75°W.
COAL SAMPLE NO.(S)	68-C-16, -17	LONG °W.	78°53'00"	TWP.	Shade	COMMENTS	Units 4 - 6	may be a part of Unit 7.	
COMPANY	Costantino Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Windber				
LINE # 17	PERMIT 211-5	DATE	4-11-68	7 1/2' QUADRANGLE	-				
COAL(S) REPORTED	Upper Freeport (E)?								

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S				
ROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
						% ABUN - DANCE	THICK - NESS												
							> 60	30 - 60	15 - 30										
56'																		Coals analyzed M/7-25-69	
10' +	Ss				N6													Fissile; beds 1/2" - 3"; slabby; plt. frgs.; fine-grained, clay matrix, dark minerals.	
20' 0"	Ss			G	N7													Fissile; beds 3" - 1' (mostly 6" - 1'); slabby; plt. frgs., leaves, a - r; fine- to very fine-grained, clay matrix, dark minerals.	
To 2' 0"	Coal		0-24		N1 - N2		+			D	1.5	19.7	51.1	27.6	1.12	10187		69-C-17, coal.	
15' 0"	Cl sh - Cs			U	N5													Silty; fissile, subfissile; beds 1/4" - 3"; splintery, hackly, rubbly; mica l, c; plt. frgs., c.	
2' 0"	Cl sh			U	5Y 6/1													Fissile; beds 1/8" - 1/2"; chippy, hackly; plt. frgs., c.	
2' 0"	Bone			G	N2														
1' 0"	Cl sh			S	5Y 6/1													Fissile; beds 1/8" - 1/4"; hackly; plt. frgs., c; con- torted beds.	
3' 0" - 3' 6"	Coal		0-42	S	N1	+			+	MB	3.0	21.0	63.2	12.8	0.62	11880		68-C-16, Upper Freeport (E)? coal. Splintery; fine partings, a.	
2' 0"	Ss			S	N5													Beds 6"-2'; rubbly; plt. frgs., <u>Stigmaria</u> , c; medium-grained, good sorting, rounded, clay matrix, silica cement; hard; Fe-stain.	
1' 6" +	Uc			S	N7 - 5Y 6/1													Rootlets, <u>Stigmaria</u> , c.	

NE ← Appx 2000 ft → SW
(Vertically exaggerated)

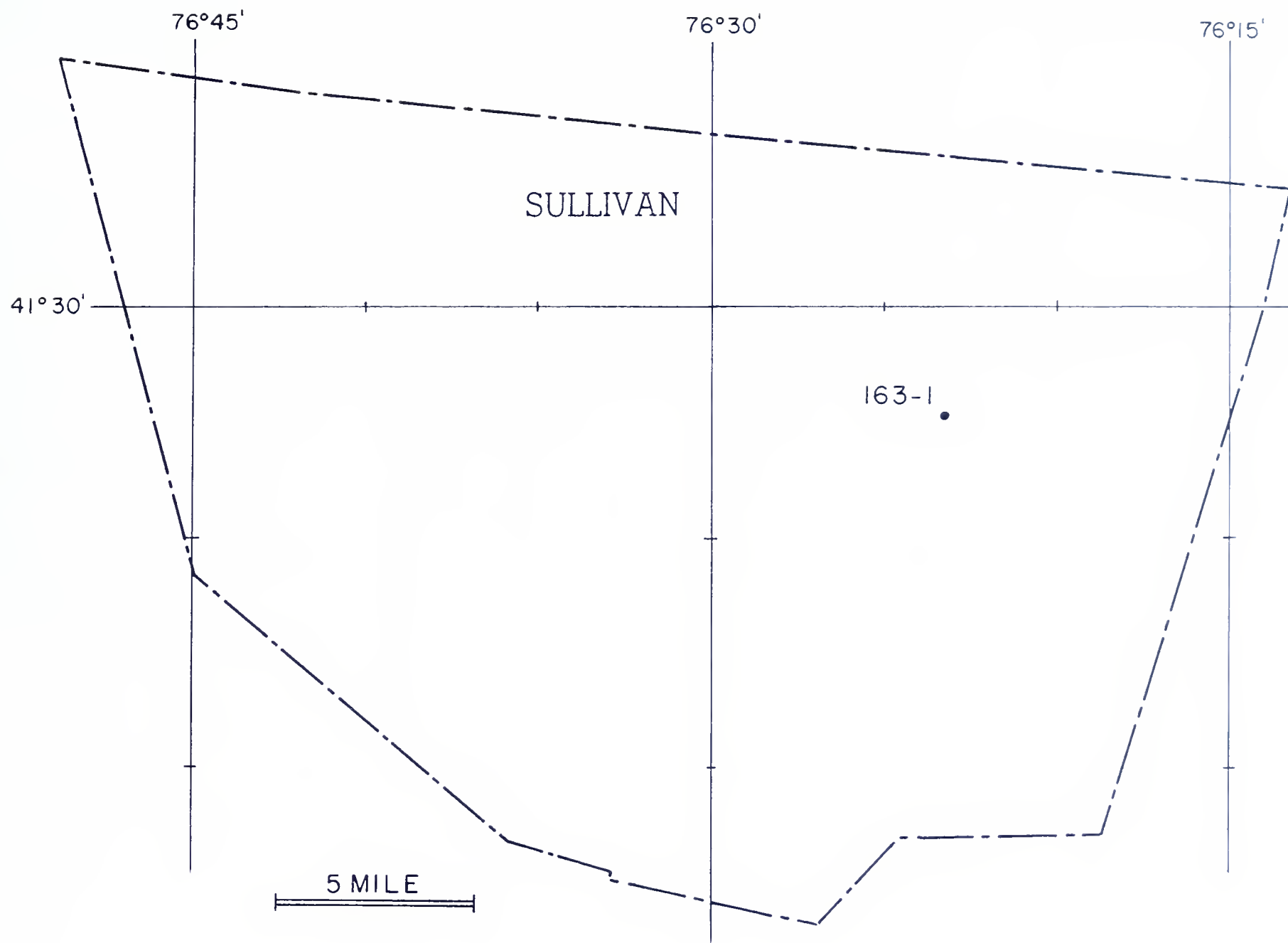


SITE/STATION NO.		68-16		LAT °N.		40°02'29"		COUNTY		Somerset		WEATHERING		extreme		JOINTING		
COAL SAMPLE NO.(S)		68-C-18		LONG °W.		78°54'14"		TWP.		Stony Creek		COMMENTS		See comments below.				
COMPANY Somerset Coal & Excavation Co.				GEOLOGIST		wee		15' QUADRANGLE		Windber								
MINE		Lambert		PERMIT		489-1		DATE		7-10-68		7 1/2' QUADRANGLE						
COAL(S) REPORTED				Middle Kittanning (C)?														
S T R A T I G R A P H I C																		
D A T A																		
COAL CHEMICAL ANALYSES																		
C O M M E N T S																		
GROSS UNIT																		
NUMBER	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS	
							ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)			
							% ABUN - DANCE	THICK - NESS										
> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"											
Coals analyzed M/7-25-69																		
T	36'																	
6	10' 0"	cover															Soil, appears to be weathered from material similar to unit 5.	
5	18'+	Ss				5Y 6/2 - N5 - N6											Clayey, silty; fissile; beds 1/2" - 3"; slabby; silt to very fine-grained, poor sorting, clay matrix; flat bedded.	
4	2' 11"	Coal Coal	1' 0" 1' 11"	23-35 0-23	S G	N1 N1		+		+	MD MB						Fine cubic fracture; fine partings, a. Granular; fine parting, a. Unit 4: Middle Kittanning (C)? coal.	
3	1' 6"	Cs			S	N4											Frag's. 1/4"; hackly, rubbly; plt. frgs., leaves, rootlets, <u>Stigmara</u> , a; slickensides.	
2	3' 3"	Coal	0' 4"	35-39	S	N1	+		+	+	MD	0.4	16.0	61.9	21.7	2.46	11759	
		Coal	1' 0"	23-35		N1	+		+	+	MD	0.6	16.2	61.5	21.7	2.47	11711	
		Coal	1' 11"	0-23		N1	+		+	+	MD	0.8	17.0	68.5	13.8	3.85	13139	
												0.7	16.6	65.6	17.0	3.28	12558	
1		Uc			S	N7												
	Note:																Owner says upper bench disappears across the road to west and entire coal thins to 8". Dozer operator called this "Dirty" C (Upper Kittanning (C')). Schmidt called this Middle Kittanning. May be local channel coal.	

STATION NO. 69-1		LAT °N. 39°59'40"		COUNTY Somerset	WEATHERING fresh	JOINTING
SAMPLE NO(S) 69-C-7		LONG °W. 78°53'20"		TWP. Stony Creek	COMMENTS See comments below.	
PANY R.H. Glessner Jr. Coal Co.		GEOLOGIST wee	15' QUADRANGLE Berlin			
No. 7		PERMIT 221-3	DATE 7-11-68	7 1/2' QUADRANGLE -		
L(S) REPORTED		Lower Bakerstown.				

S T R A T I G R A P H I C						D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
						% ABUN - DANCE				THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
18'																			Coal analyzed M.7-25-69		
16'+	Cl sh				N4 - 5Y 4/1														Silty; fissile; beds 1/8" - 1/4"; chippy, equant; plt. frgs., leaves, c; siltier upward; Ss laminae locally.		
1' 6"	Coal		0-18	S	N1	+					+	+	MB	0.6	18.8	66.1	14.5	1.02	13115	Cubic fracture; discontinuous Sh partings, N1, with pyrite 0" - 1/4", r. 69-C-7, Lower Bakerstown coal.	
0' 3"+	St sh			S	N3															Fissile; beds 1/8" - 1/4"; chippy; pyrite crystals on surfaces; vitrain stringers.	
Note:																				A steep dipping fault represented by a 2" - 3" clay zone strikes N80°W and dips 10°N and vertically displaces the coal a little more than its thickness. The highwall is uniform on both sides of the fault. Three similar faults are reported 1/2 mile to the northeast in a backfilled stripping.	

SITE NO. 69-2

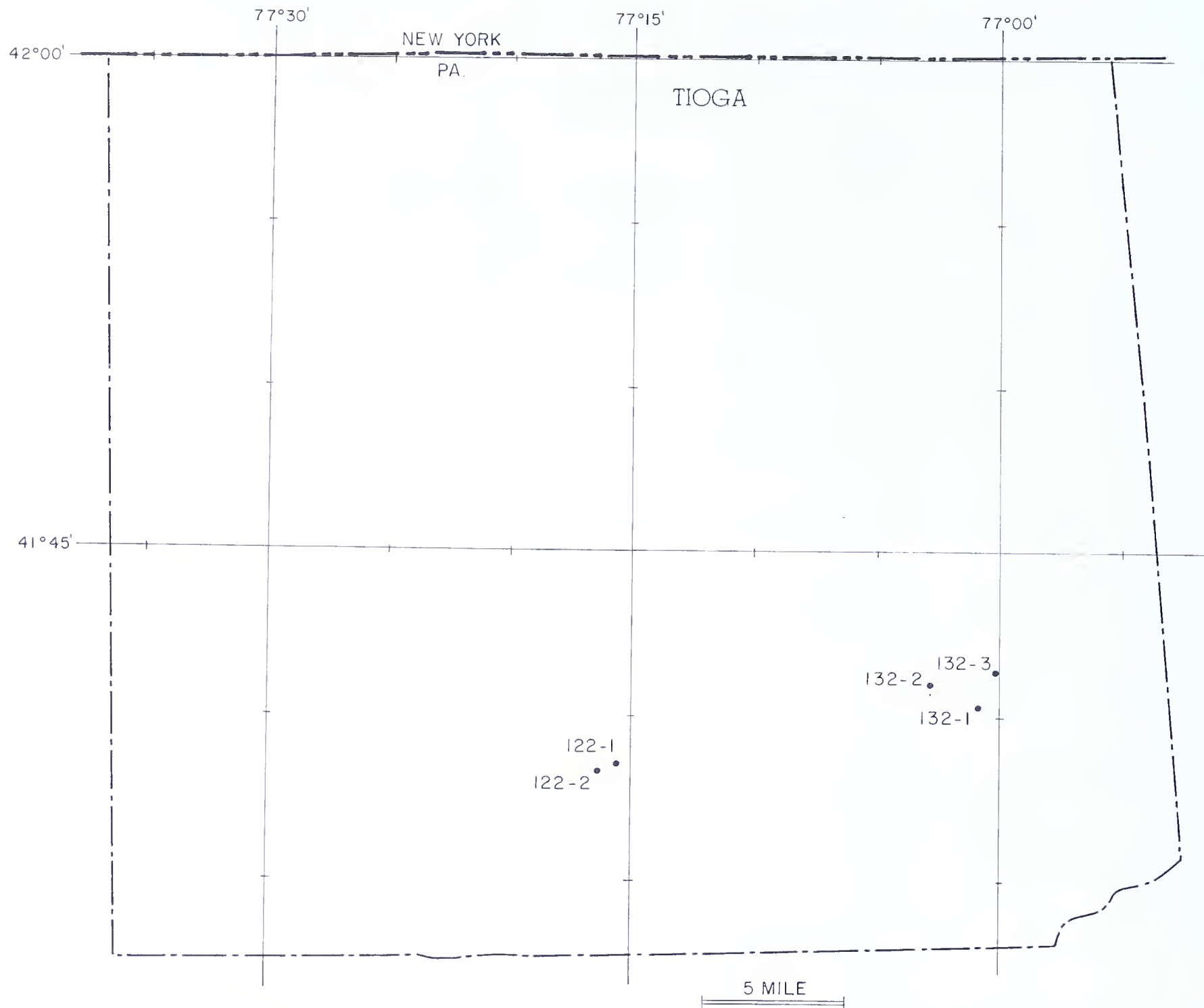


SITE/STATION NO.	163-1 (page 1)	LAT °N.	41°27'42"	COUNTY	Sullivan	WEATHERING	fresh	JOINTING	N27°W, N85°E.
COAL SAMPLE NO.(S)	163-C-1	LONG °W.	76°23'14"	TWP.	Cherry	COMMENTS	Units 1 - 7, section exposed directly below toe		
COMPANY	Bliss Bros. Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	La Porte	spoils of stripping. Units 2, 4, 6, "Bernice",			
MINE	Bernice #2 strip	PERMIT	35-3	DATE	6-12-67	7 1/2' QUADRANGLE	"B" by Mr. Bliss. Unit 9, "C" by Mr. Bliss.		
COAL(S) REPORTED	"B" and "C".								

S T R A T I G R A P H I C D A T A														C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH										
							% ABUN - DANCE	THICK - NESS															
														> 60 30 — 60 15 — 30 0 — 15	> 1/4" 1/8" — 1/4" 1/32" — 1/8" < 1/32"								
		Coal	0' 10 1/2"	34 1/2-45		N1																	
			0' 1/2"																				
		Coal	1' 0"	22-34		N1												Parting, persistent.					
			0' 1"																				
2	3' 9"	Coal	1' 9"	0-21		N1												Parting, persistent. "B", or Bernice coal. Unit 2: Deep mined.					
1		Uc			S																		
				</																			

ITE/STATION NO.	163-1 (page 2)	LAT °N.	41°27'42"	COUNTY	Sullivan	WEATHERING	fresh	JOINTING	N27°W, N85°E.
COAL SAMPLE NO.(S)	163-C-1	LONG °W.	76°23'14"	TWP.	Cherry	COMMENTS	Units 1 - 7, section exposed directly below toe		
COMPANY	Bliss Bros. Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	La Porte	of spoil of stripping. Units 2, 4, 6, "Bernice"			
LINE	Bernice #2 strip	PERMIT	35-3	DATE	6-12-67	7 1/2' QUADRANGLE	or "B" by Mr. Bliss. Unit 9, "C" by		
COAL(S) REPORTED	"B" and "C".					Mr. Bliss.			

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
INTERVAL (TOTAL)	ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH									
	% ABUN - DANCE											THICK - NESS								
	> 60						30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
66'																	Coal analyzed M/7-7-69			
30' 0"	Ss					N5 - N6											Beds 1"-4" (some to 1 1/2'); mica l, a; lensoidal cut and fill; plt. frgs., c; fine-to medium-grained, good sorting, angular, silica cement, dark minerals, rock fragments; Sts lense, r. Fluvial deposit composed of lenses 7"-3' thick x 100' long with no orientation of cross-beds.			
to 1' 6"	St sh				U	N2											Fissile; beds 1/8" - 1/4"; platy, chippy; <u>Pecopteris</u> sp., mica l, r; leaves, c; lower 3" carbonaceous with anthraxylon stringers; N3, upward.			
2' 6"	Coal			0-30	S	N1						1.6	15.2	71.7	11.5	0.52	12650	Partings, r; purple-brown iridescent Fe-sulfate stain. Not examined. <u>163-C-1</u> , "C" coal.		
	Uc				S	N5												Silty; frag's. - 1/2"; hackly; N2, upward.		
17'±	covered																	Covered interval.		
8' 0"	St sh	5' 0"				N4												Fissile; beds 1/8"-1/2"; chippy; mica l, r; plt. frgs., leaves, c.		
	Cl sh	3' 0"			G	N4												Fissile; beds 1/8" - 1/4"; chippy; <u>Neuropteris</u> sp., a (sampled); siderite to 1", r; mica l, r; leaves, a.		
0' 11"	Coal			0-11	S	N1												"B" or Bernice coal.		
3' 0"	Uc				S	N4												Frag's. -1/2"; hackly; plt. frgs., leaves, c.		
1' 0"	Coal			0-12	S	N1												"B" or Bernice coal.		
0' 3"	Cl sh				S	N3												Silty; beds 1/8" - 1/4"; chippy; mica l, c; plt. frgs., leaves, c.		



TE/STATION NO.	122-1	LAT °N.	41°38'39"	COUNTY	Tioga	WEATHERING	fresh	JOINTING	N35°W.
AL SAMPLE NO.(S)	122-C-1	LONG °W.	77°15'31"	TWP	Hamilton	COMMENTS	Unit 2 inaccessible. Operator noted that Bloss		
COMPANY	Jones & Brague Mining Co.	GEOLOGIST	adg	15' QUADRANGLE	Antrim	coal has been mostly mined out in this area, and			
INE	PERMIT 7-3	DATE	6-2-66	7 1/2' QUADRANGLE	Antrim	is 80' - 90' below the Seymour coal.			

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S			
ROSS UNIT	L I T H O L O G Y	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
INTERVAL (TOTAL)						ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE				THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"									
22'																					
	C1 sh	18' 0"																Beds 1/32" - 1/4"; plt. frgs.; interbedded with Sts upward.			
3' 4 1/2"	Coal	0' 10"	30 1/2 - 40 1/2	S	N1								0.7	20.0	67.1	12.2	0.82	13160	Bony; thin coaly streaks.		
	Bone	0' 10 1/2"																			
	Coal	0' 7"	13-20		N1								0.7	18.8	62.7	17.8	0.85	12360	Splintery fracture; slightly bony.		
	Coal	0' 7"	6-13		N1								0.5	21.3	67.8	10.4	1.07	13430	Banded; sh partings.		
	Sh	0' 4"																	Parting; tough.		
	Coal	0' 2"	0-2"		N1														Not sampled.		
													0.6	20.0	66.0	13.3	0.90	13005	Seam average of 122-C-1, Seymour coal.		
																	</				

SITE/STATION NO.		122-2 (page 1)		LAT °N.		41°38'27"		COUNTY		Tioga		WEATHERING		fresh		JOINTING: (Coal) N27°W, N70°E, N55°W.		
COAL SAMPLE NO.(S)		122-C-2, -3, -4		LONG °W.		77°16'15"		TWP.		Duncan		COMMENTS Jointing: (Shale) N40°W, N29°W, N75°W.						
COMPANY		Jones & Brague Mining Co.		GEOLOGIST		gbg		15' QUADRANGLE		Antrim		300' to the north glaciofluvial material is on top of coal.						
MINE		PERMIT 7-7		DATE		8-5-68		7 1/2' QUADRANGLE		Antrim		Mined by: Liberty Valley Construction Co.						
COAL(S) REPORTED		Seymour ?										(Note: Units 2, 4, and 6 comprise the Seymour ? coal).						
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S		
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)			
							% ABUN - DANCE	THICK - NESS										
		> 60	> 1/4"															
		30 - 60	1/8" - 1/4"															
		15 - 30	1/32" - 1/8"															
		0 - 15	< 1/32"															

TE/STATION NO.	122-2 (page 2)	LAT °N.	41°38'27"	COUNTY	Tioga	WEATHERING	fresh	JOINTING: (Coal)	N27°W, N70°E, N55°W, N30°E
COAL SAMPLE NO.(S)	122-C-2, -3, -4	LONG °W.	77°16'15"	TWP.	Duncan	COMMENTS	Jointing: (Shale) N40°W, N29°W, N74°W.		
COMPANY	Jones & Braque Mining Co.	GEOLOGIST	gbq	15' QUADRANGLE	Antrim	300' to the north glaciofluvial material is on top of coal.			
LINE	PERMIT 7-7	DATE	8-5-68	7½' QUADRANGLE	Antrim	Mined by: Liberty Valley Construction Co.			
COAL(S) REPORTED	Seymour ?					(Note: Units 2, 4, and 6 comprise the Seymour? coal).			

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
							ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
	42'																	Coals analyzed M/7-25-69			
	9' 0"	Sh																Extremely weathered; inaccessible.			
	6' 0"	Cl sh				N3												Fissile; beds 1/8" - 1/2"; small siderite nodules; plt. frgs., r; silt laminae upward; extremely weathered.			
	0' 10"	St sh			S	N3 - N4												Subfissile; beds 1/4" - 3"; platy; leaves, c.			
	10' 0"	Ss			G	N4 - N6												Subfissile; beds 1/4" - 6"; blocky; micro cross-bedding; very fine- to fine-grained; carbonaceous; silt increases upward.			
	5' 0"	lss sh			G	N4 - N5												Fissile; beds 1/8"-1/2"; platy; plt. frgs., r; sandy upward.			
	2' 6"	Sts			G	N4												Subfissile; beds 1/8" - 3"; slabby, hackly; 2" - 3" siderite lenses, c.			
	0' 6"	Sh			G	N1												Beds 1/2" - 3"; blocky; carbonaceous; tough; "steel-gray" color.			
	1' 9"	lsc sh			G	N4 - N5												Beds 1/2" - 1"; platy; leaves, c; tough.			
	0' 8 1/2"	Coal		0-8 1/2	S	N1		+		+	+	MB	0.5	19.0	56.9	23.6	0.79	11566	Lower 2" is nonbanded coal. <u>122-C-4</u> , Seymour? coal.		
	0' 1"	Cs			S	5YR 4/1													Parting; solid; hackly; rubbly; coaly partings, r; slickensides.		
+	2' 1"	Coal	0' 8"	17-25	S	N1			+		+	MB	0.4	15.5	54.1	30.0	0.54	10138			
		Coal	1' 5"	0-17	G	N1	+			+		B	0.2	22.6	66.3	10.9	0.86	13550	Splintery.		
													0.3	20.3	62.4	17.0	0.76	12458	Seam average of <u>122-C-3</u> , Seymour? coal.		

SITE/STATION NO.		132-1 (page 1)		LAT °N.		41°40'19"		COUNTY		Tioga		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		132-C-1		LONG °W.		77°00'50"		TWP.		Hamilton		COMMENTS						Units 8 - 12 inaccessible.			
COMPANY		Jones & Braque Mining Co.		GEOLOGIST		adg		15' QUADRANGLE		Blossburg											
MINE		Pine Hill		PERMIT		7-11		DATE		5-25-66		7 1/2' QUADRANGLE									
COAL(S) REPORTED		Unknown.																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
		Coal	0' 10 1/2"	82-92 1/2	S	N1							0.6	16.9	74.7	7.8	0.48		13900	Thin Sh partings.	
		Coal	0' 2 1/2"	79 1/2-82		N1							0.6	14.7	70.4	14.3	0.43		12980	Nonbanded; possibly Sh.	
		Coal	0' 5"	74 1/2-79 1/2		N1							0.6	15.4	78.4	5.6	0.50		14250	Thin Sh partings, c.	
		Sh	2' 2"																	Parting; blocky fracture; nonbanded.	
		Clay	0' 8 1/2"																	Parting.	
		Coal	0' 10"	30-40		N1							0.6	17.3	73.6	8.5	0.79		13740	Thin Sh partings, c.	
		Sh	0' 2"																	Parting; bony; nonbanded.	
		Coal	0' 3"	25-28		N1					B	0.5	30.0	56.4	13.1	0.80		12980			
		Sh	0' 8 1/2"																	Parting; bony.	
		Coal	0' 3"	13 1/2-16 1/2		N1						0.5	30.0	59.0	10.5	0.63		13550			
		Sh	0' 2"																	Parting; nonbanded; metallic luster.	
2	7' 8 1/2"	Coal	0' 11 1/2"	0-11 1/2		N1						0.8	29.6	59.4	10.2	0.71		13420	Thin banded.		
												0.6	21.6	68.5	9.2	0.64		13647	Seam average of sample 132-C-1.		
1		St sh				N3															

TE/STATION NO. 132-1 (page 2)		LAT °N. 41°40'19"		COUNTY	Tioga	WEATHERING	fresh	JOINTING
AL SAMPLE NO.(S) 132-C-1		LONG °W. 77°00'50"		TWP	Hamilton	COMMENTS Units 8 - 12 inaccessible.		
MPANY Jones & Braque Mining Co.		GEOLOGIST adg		15' QUADRANGLE Blossburg				
NE Pine Hill		PERMIT 7-11		DATE 5-25-66		7 1/2' QUADRANGLE		-
AL(S) REPORTED		Unknown.						

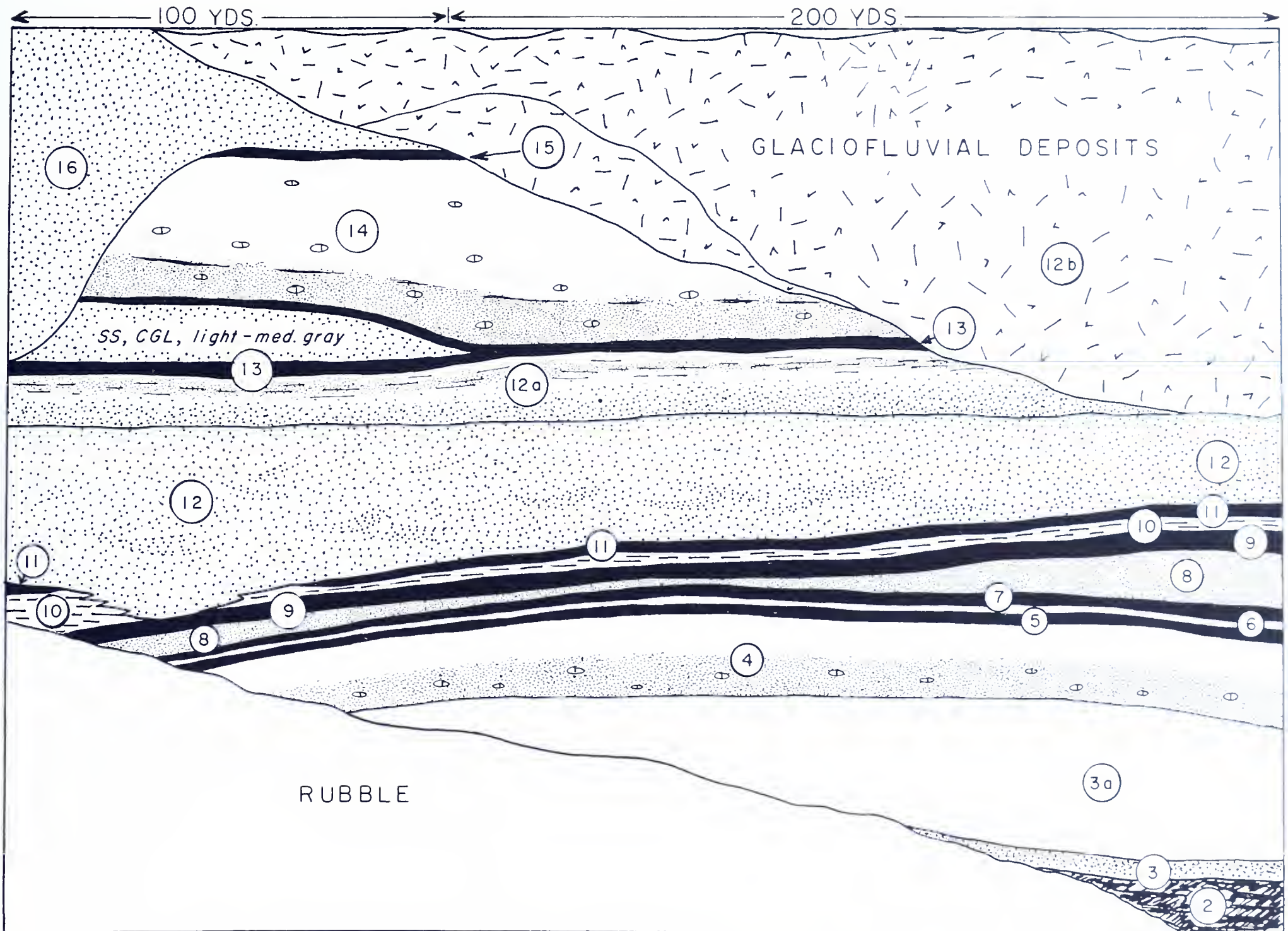
S T R A T I G R A P H I C D A T A														C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S			
CROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L							P R O X I M A T E (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
						A N T H R A X Y L O N							ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
						% ABUN- DANCE				THICK- NESS												
INTERVAL (TOTAL)						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"									
50' ±																						
	Ss																					
2' 6"	Coal		0-30	S	N1														Thin Sh partings, c.			
8' 0"	Ss			S															Grades to Cl sh upward.			
2' 0"	Cl sh			S															Semi-plastic.			
2' 0"	Coal		0-24	S	N1														Lower portion of coal, bright; upper portion nonbanded, dull.			
1' 8"	Uc				N5														<u>Stigmaraia</u> .			
4' 0"	Ss			G	N5														Beds 3" - 1'; mica, a; very fine-grained; clay matrix and silica cement, c; carbonaceous material interbedded.			
0' 10"	Coal		0-10	S																		
9' 0"	Ss			S															Beds 1/2" - 3"; mica, a; silt to very fine-grained; clay matrix and silica cement, c; grades upward to Sts, then Uc.			
2' 4"	Cl sh			G	N5														Beds 1/4" - 1/2"; hackly, rubbly; siderite nodules.			
0' 8"	Ss			G	N5 - N7														Beds 3" - 1'; blocky; mica, a; fine- to medium-grained; clay matrix and silica cement, c; dark minerals, r; clay galls, a; somewhat porous; interlaminated.			

SITE/STATION NO.		132-2		LAT °N.		41°41'03"		COUNTY		Tioga		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)		132-C-2		LONG °W.		77°02'54"		TWP.		Hamilton		COMMENTS									
COMPANY Jones and Brague				GEOLOGIST		adg		15' QUADRANGLE		Blossburg											
MINE Frederick		PERMIT 7-5		DATE		5-25-66		7 1/2' QUADRANGLE		-											
COAL(S) REPORTED				Lower Kittanning (B)?																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60*	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	27'																				
4	24' 0"	Ss & Sts				N7											Beds 1/2" - 1'; mica, c; very fine- to fine-grained, clay matrix.				
3	0" - 6"	St sh			U	N5											Beds 1/4" - 1/2"; hackly; plt. frgs.				
2	2' 8"	Coal	0' 3"	0-22 1/2	S	N1							0.8	19.8	73.7	5.7	1.43	14250	Thin Sh partings; bony streaks.		
		Bone	0' 2"				N1														
		Coal	0' 2"	25-27			N1							0.8	18.9	68.5	11.8	1.24	13240	Sh partings.	
		Coal	0' 2 1/2"				N1												Bony. Not sampled.		
		Coal	1' 10 1/2"	29-32			N1					B	0.8 0.8	18.1 19.6	64.4 72.3	16.7 7.3	2.30 1.51	12420 13977	Thin Sh parting. Seam average of 132-C-2, Lower Kittanning (B)? coal.		
1		Uc			S																

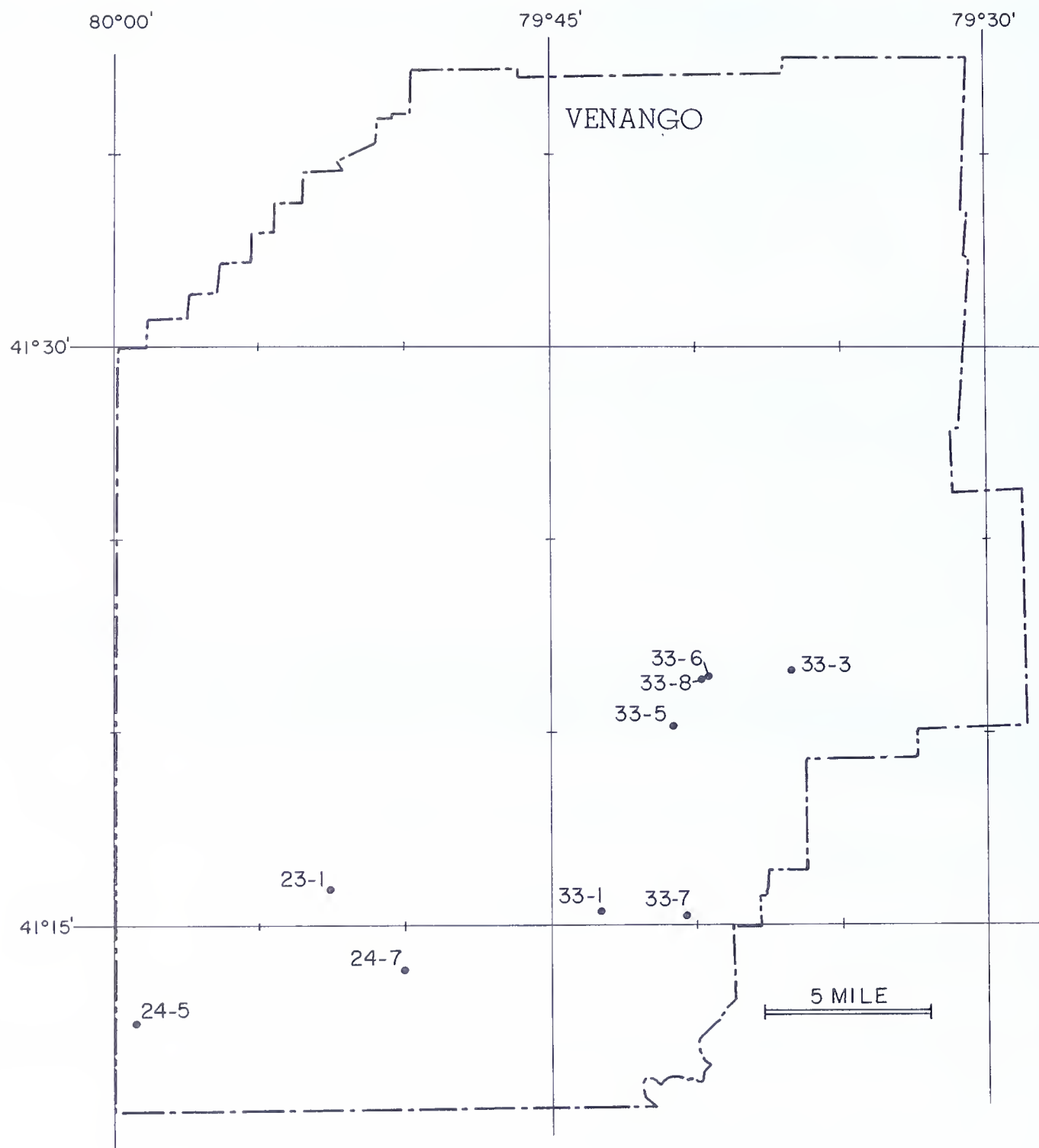
E/STATION NO.	132-3 (page 1)	LAT °N.	41°41'25"	COUNTY	Tioga	WEATHERING	fresh	JOINTING: (Coal)	N36°W, N55°E.
L SAMPLE NO(S)	132-C-3, through -7	LONG °W.	77°00'06"	TWP.	Ward	COMMENTS	Units 15 and 16 inaccessible.		
IPANY	Jones & Braque Mining Co.	GEOLOGIST	gbg	15' QUADRANGLE	Blossburg				
E Pine Hill	PERMIT 7-1	DATE	8-5-68	7 1/2' QUADRANGLE	-	Being shipped by Liberty Valley Construction Co.			
L(S) REPORTED Cannel Vein, Lower Freak Vein, Upper Freak Vein, Lower Morgan, Upper Morgan									

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
						% ABUN - DANCE		THICK - NESS													
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
																			Coals analyzed M/7-25-69		
4' 6"	Cs	0' 10"		S	5YR 4/1														Solid; hackly; rootlets, c.		
	Cs	2' 0"		G	N6														Silty; solid, blocky; <u>Stigmara</u> , a.		
	Sts	1' 8"		G	N4														Sandy; beds 1' - 2'; blocky; <u>Stigmara</u> , r.		
3" - 1'	Coal		0-12	S	N1		+			+		MB	0.5	20.3	68.8	10.4	1.54		13550	Splintery. <u>132-C-5</u> , Upper Freak Vein coal.	
0' 9"	lsc st			S	N4															Solid; hackly, rubbly; white sulfur flowers.	
0' 10"	Coal		0-10	S	N1		+			+		MB	0.6	18.1	66.4	14.9	0.85		12921	Splintery; <u>Stigmara</u> , a. <u>132-C-4</u> , Lower Freak Vein coal.	
6' 6"	Cs	3' 3"		S	5YR 4/1															Beds 1/2" - 1'; hackly, rubbly; <u>Stigmara</u> , c; carbonaceous material on bedding planes; 3' tree trunk in situ.	
	Sts	3' 3"		G	N5															Beds 1/2" - 1'; blocky; siderite nodules 1/2" - 1", a; <u>Stigmara</u> , a.	
4' 6"	lss st	4' 0"		G	N3 - N6															Frag's. + 1/2"; hackly, rubbly; leaves, a.	
	Ss	0' 6"		G	N6 - N7															Subfissile; beds 1/8"-1/4"; flaggy; plt. frgs., a; very fine-grained, clay matrix; carbonaceous material on bedding planes; thin-bedded; grades upward to Sts.	
4' 9 1/2"	Bone	0' 10"	47 1/2 - 57 1/2	S	N1			+				D	0.3	10.3	31.9	57.5	0.26		5758	Nonbanded; conchoidal fracture.	
	Coal	1' 7"	28 1/2 - 47 1/2		N1			+		+		MB	0.5	16.9	70.5	12.1	0.49		13405	Splintery.	
	Bone	2' 4 1/2"	0-28 1/2		N1			+				D	0.6	11.7	29.4	58.4	0.57		5493	Nonbanded; conchoidal fracture.	
													0.5	13.2	43.4	43.0	0.49		8153	Seam average of <u>132-C-3</u> , Cannel Vein (bottom) coal.	
0' 4"	Uc			S	5YR 4/1															Shaly; subfissile; beds 1/2" - 1'; hackly, rubbly; weathered Cs.	

SITE/STATION NO.		132-3 (page 2)		LAT °N.		41°41'25"		COUNTY		Tioga		WEATHERING		fresh		JOINTING: (Coal) N36°W, N55°E.					
COAL SAMPLE NO.(S)		132-C-3, through -7		LONG °W.		77°00'06"		TWP.		Ward		COMMENTS		Units 15 and 16 inaccessible.							
COMPANY		Jones & Brague Mining Co.		GEOLOGIST		gbg		15' QUADRANGLE		Blossburg											
MINE		Pine Hill		PERMIT		7-1		DATE		8-5-68		7 1/2' QUADRANGLE		Being shipped by Liberty Valley Construction Co.							
COAL(S) REPORTED Cannel Vein, Lower Freak Vein, Upper Freak Vein, Lower Morgan, Upper Morgan																					
S T R A T I G R A P H I C D A T A																					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
T	74' - 86'																				
16	20' - 35'	Ss				N6											Beds 2' - 4'; cross-bedding vague; mica 2, c; fine- to medium-grained, subangular to subrounded.				
15	0' 6"	Coal		0-6	U	N1	+														
14	15' 0"	Cs	3' 0"		G	N5											Frag's. - 1/2"; hackly.				
		Cs	6' 0"		G	N5											Frag's. + 1/2"; blocky.				
		Sts	6' 0"		G	N5											Beds 1/2" - 8"; blocky; siderite nodules to 7"; 2" coal stringers 6' from bottom; slickensides.				
13	0' 10"	Coal		0-10	S	N1	+				+	MB					Yellow and white sulfur coating, a.				
12a	13' 0"	lsc sh	4' 0"		S	N5 - N6											Subfissile; beds 1/8" - 1/2", solid; hackly; leaves, Stigmara, a; bedding planes carbonaceous; grades upward to Cs.				
		Ss	9' 0"		G	N4 - N5											Beds 6" - 2'; slabby; branches, c; very fine- to fine grained, clay matrix; carbonaceous laminae 1/64" - 1/8", a.				
12b	36' 0"	Gravel			U												Glaciofluvial material covers Units 12 - 16.				
12	11' 0"	Ss			U	N7											Beds 3" - 2'; vague cross-bedding; mica 2, c; branche c; medium- to coarse-grained, poor sorting, sub- angular, clay matrix, a; carbonaceous material on bedding planes.				
11	0' 10"	Coal		0-10	S	N1		+			+		0.5	17.2	51.3	31.0	0.63	10089	2" bone at 1 1/2" from top. 132-C-7, Upper Morgan coal.		
10	1' 6"	Sh			S														Bone; subfissile; beds 1/4" - 1/2"; platy; coal stringers		
9	2' 1"	Coal	1' 9"	4-25	S	N1		+			+	VB	0.4	21.5	69.8	8.2	0.88	14034	Splintery fracture at top.		
		Coal	0' 4"	0-4	S	N1		+			+	VB	1.9	19.5	46.3	32.3	11.71	9315	Sulfur in lower 4".		
													0.6	21.2	66.1	12.1	2.61	13279	Seam average of 132-C-6, Lower Morgan coal.		



SITE 132-3



SITE/STATION NO. 23-1		LAT °N. 41°15'52"		COUNTY Venango		WEATHERING fresh		JOINTING	
COAL SAMPLE NO.(S)		LONG °W. 79°52'32"		TWP. Clinton		COMMENTS "Minor compaction slip" displaces Units 1 - 4, approximately 1' - 1' 6".			
COMPANY Lucas Coal Co.		GEOLOGIST wee		15' QUADRANGLE Franklin					
LINE Roeder		PERMIT 174-3		DATE 5-18-66		7 1/2' QUADRANGLE Polk			
COAL(S) REPORTED Clarion coal.									
S T R A T I G R A P H I C D A T A									
COAL CHEMICAL ANALYSES									
C O M M E N T S									
COAL PROXIMATE (%)									
ANTHRAXYLON									
% ABUN - DANCE									
THICK - NESS									
ATRITUS LUSTER									
MOISTURE									
VOLATILE									
FIXED CARBON									
ASH									
SULFUR (%)									
AIR DRYING LOSS (%)									
BRITISH THERMAL UNITS									
INTERVAL (TOTAL)									
LITHOLOGY									
INTERVAL (SUB-UNIT)									
COAL BENCHES CUMULATIVE, IN INCHES									
CONTACT (UPPER)									
COLOR (MUNSELL)									
> 60									
30 - 60									
15 - 30									
0 - 15									
> 1/4"									
1/8" - 1/4"									
1/32" - 1/8"									
< 1/32"									
20'									
Cl sh 7' 0"									
N6 - 5Y 6/1									
Cl sh 2" - 8"									
S N1 - N2									
Sts 2" - 6"									
S N5 - 5Y 4/1									
Cl sh 4' 0"									
S 5Y 4/1									
Cl sh 2' 0"									
G N4 - N3									
13' 4" - 14' 2"									
2" - 2' Cs or Sts									
S N1 - N2									
L									
1' 5" - 1' 7" Coal 1' 5" - 1' 7" 0-19 S N1 B									
2' 0" - 2' 6" Cl sh S									
Coal 0' 3" 19-22 S N1 B									
Sts 0" - 2"									
Coal 1' 3" - 1' 5" 0-17 N1 B									
1' 8" - 1' 10"									
Uc S									
Slightly silty; N3 (upper 1"), N6 (few inches below).									

SITE/STATION NO.		24-5		LAT °N.		41°12'23"		COUNTY		Venango		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO.(S)		24-C-5		LONG °W.		79°59'19"		TWP.		Irwin		COMMENTS									
COMPANY				Pengrove Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Hilliards							
MINE		Rice & Remond		PERMIT		74-1 (A2)		DATE		8-10-66		7 1/2' QUADRANGLE		Barkeyville							
COAL(S) REPORTED				Brookville.																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES				C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON			ASH	SULFUR (%)	AIR DRYING LOSS (%)
							% ABUN - DANCE														
							THICK - NESS														
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"												
T	23'																				
4		cover															Soil.				
3	20' 0"	Ss				N6											Beds 3" - 1'; mica, r; very fine- to fine-grained; minerals, r.				
2	2' 8"	Coal		0-32	S	N1		+		+	D	1.8	35.2	55.9	7.1	3.63	13150 Bony; pyrite partings. Wet. 24-C-5, Brookville coal.				
1		Uc			S	N6															

ITE/STATION NO.	24-7	LAT °N.	41°13'51"	COUNTY	Venango	WEATHERING	fresh	JOINTING	N25°W
COAL SAMPLE NO.(S)		LONG °W.	79°50'08"	TWP.	Clinton	COMMENTS			
COMPANY	Winger Coal Co.	GEOLOGIST	wee	15' QUADRANGLE	Hilliards				
LINE no name	PERMIT 24-7	DATE	5-18-66	7 1/2' QUADRANGLE	Eau Claire				
COAL(S) REPORTED	Brookville.								

S T R A T I G R A P H I C D A T A										C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S					
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	C O A L						P R O X I M A T E (%)					S U L F U R (%)	A I R D R Y I N G L O S S (%)	B R I T I S H T H E R M A L U N I T S	
						A N T H R A X Y L O N		ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
						% ABUN - DANCE														
						> 60	30 - 60							15 - 30						0 - 15
40'																				
	Ls																		Vanport Ls float material.	
	Sh			?	N1														Coaly, or possibly shaly coal.	
4' 0"	Uc				N9														Non-silty; weathered.	
14' 0"	cover																		Covered interval.	
19' 0"	St sh	11' 0"			N4														Clayey; beds $\frac{1}{4}$ " - $\frac{1}{2}$ "; becomes N5 upward; platy; plt. frgs., leaves, c.	
	St sh	5' 0"			N5														Clayey; beds $\frac{1}{4}$ " - $\frac{1}{2}$ "; becomes N4 upward; platy; plt. frgs., leaves, c.	
	Cl sh	3' 0"			N5														Silty; beds $\frac{1}{4}$ " - $\frac{1}{2}$ "; platy; plt. frgs., leaves, c. Unit 3: Shale in shale channel, with axis N30°E.	
2' 3"	Coal	1' 0"	15-27	S	N1														Discontinuous fusain and pyrite partings, r.	
	Coal	0' 4 $\frac{1}{2}$ "	10 $\frac{1}{2}$ -15	S	N1															
	Sts	0' 1"		G	N1														Coaly; solid.	
	Coal	0' 9 $\frac{1}{2}$ "	0-9 $\frac{1}{2}$	G	N1														Blocky fracture. Discontinuous pyrite and fusain partings, r. Unit 2: Brookville coal.	
1' 0"	Uc			S	N5 - N6														<u>Stigmara</u> , c; little silt slickensides.	

SITE NO. 33-3

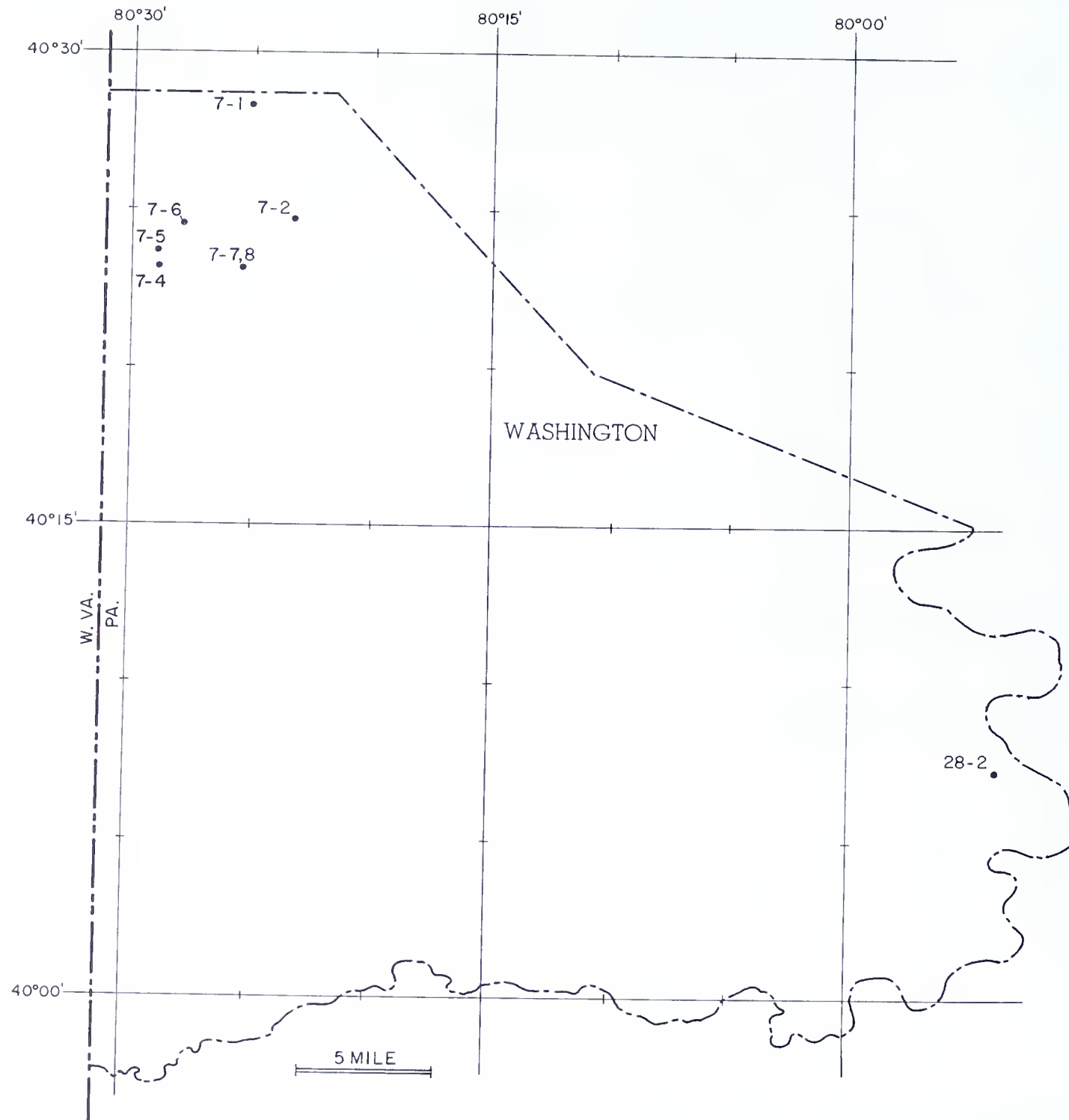
SITE/STATION NO.		33-5		LAT °N.		41°20'13"		COUNTY		Venango		WEATHERING		JOINTING							
COAL SAMPLE NO(S)		33-C-5		LONG °W.		79°40'43"		TWP.		Cranberry		COMMENTS		See Site 33-6 (450-2 mine permit) for supplementary stratigraphy.							
COMPANY		Jack Bros. Constr. Co.		GEOLOGIST		tmb		15' QUADRANGLE		Oil City											
MINE		Jack # 3		PERMIT		450-2A2		DATE		8-10-67		7 1/2' QUADRANGLE		Cranberry							
COAL(S) REPORTED		Lower Kittanning (B).																			
S T R A T I G R A P H I C D A T A																					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						COAL CHEMICAL ANALYSES				C O M M E N T S				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON		ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS
							% ABUN - DANCE														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	21' - 27'																				
4	15' 0"	Ss				5Y 7/2												Beds 3" - 4' (thinner bedded upward); channel axis E-W?; mica 2, c; fine- to medium-grained, good sorting, clay matrix, clay galls, c; clay chips 4' from bottom and upward, a. Unit 4: Channels into Unit 3.			
3	4' - 10'	Cl sh			S	N4 - N5												Fissile; beds 1/4" - 3"; platy, chippy; plt. frgs., r.			
2	2' 3 1/2"	Coal	0' 7"	20 1/2 - 27 1/2	S	N1	+			++	MD	1.7	42.5	47.9	7.9	5.24	13528	Cubic to rough fracture; knife-edge pyrite partings			
		Pyrite	0' 1 1/2"															Parting.			
		Coal	0' 8"	12-20		N1	+			++	MD	1.6	43.0	48.8	6.6	3.35	13770	Cubic to rough fracture; 1/8" pyrite partings; 1/4" - pyrite parting at bottom.			
		Coal	1' 0"	0-12		N1	+			++	D	1.4	36.2	42.3	20.1	3.16	11568	Rough fracture; pyrite partings, r; 1/2" pyrite at bottom.			
												1.5	39.9	45.7	12.9	3.76	12728	Seam average of 33-C-5, Lower Kittanning (B) coal.			
1		Uc			S	N7												Frag's. - 1/2"; rootlets, r.			

ITE/STATION NO.	33-6	LAT °N.	41°21'28"	COUNTY	Venango	WEATHERING	JOINTING
COAL SAMPLE NO.(S)		LONG °W.	79°39'40"	TWP.	Cranberry	COMMENTS	See Site 33-5 (450-2A2 mine permit) for supplementary stratigraphy.
COMPANY	Jack Bros. Constr. Co.	GEOLOGIST	tmb	15' QUADRANGLE	Oil City		
LINE	Jack # 3	PERMIT	450-2	DATE	8-10-67	7 1/2' QUADRANGLE	Cranberry
COAL(S) REPORTED							

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				BRITISH THERMAL UNITS			
INTERVAL (TOTAL)							ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)				
							% ABUN- DANCE	THICK- NESS													
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8"- 1/4"	1/32"- 1/8"	< 1/32"							
50'																					
6'+	Ss					10YR 6/6															Beds 1/2" - 3"; flaggy; mica 2, c; medium, coarse and very coarse-grained, fair to good sorting, sub-angular, clay matrix, dark minerals, r.
6" - 8"	Coal			0-8	S	N1															Dirty, extremely friable.
8' 0"	Uc				S	N6															Very silty; frag's. - 1/2"; hackly; rootlets, r.
35' 0"	Ss				G	N6															Beds 1/2" - 3"; chippy; mica 2, c; plt. frgs., r.
	St sh				G																Subfissile; beds 1/4" - 1/2"; platy, flaggy.
	Cl sh				G	N5															Subfissile; beds 1/4" - 1/2"; platy, flaggy.
																					Unit 1: Grades upward, as shown.

SITE/STATION NO.		33-7		LAT °N.		41°15'19"		COUNTY		Venango		WEATHERING		JOINTING							
COAL SAMPLE NO.(S)				LONG °W.				79°40'25"				TWP.		Rockland		COMMENTS					
COMPANY				Zuck Coal Co.				GEOLOGIST		tmb		15' QUADRANGLE		Oil City							
MINE		Schurer		PERMIT		36-7		DATE		8-10-67		7 1/2' QUADRANGLE		Cranberry							
COAL(S) REPORTED				Lower Clarion and Upper Clarion.																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS	
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH				
							% ABUN - DANCE		THICK - NESS												
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	33'																				
6	6' 0"	Ls				N5												Beds 3" - 2'; slabby, blocky; micritic; ?Phricodothy sp., r; weathers to 10YR 7/4; sample collected of Vanport limestone.			
5	7' 0"	Cl sh				N5												Fissile; beds 1/4" - 3"; chippy, slabby; in upper 2' siderite nodules to 2", c; pectenids and chronetids sampled.			
4	1' 6"	Coal		0-18	S	N1												Thickness noted by operator. Upper Clarion coal.			
3	5' 0"	Uc			S	N5												Frag's. 1/2"±.			
		lss sh	8' 0"		G	N3 - N6												Fissile; beds 1/4" - 3"; flaggy, chippy; mica 2, a (on bedding planes); plt. frgs., leaves, c.			
2	12' 0"	Cl sh	4' 0"		G	N4												Fissile; beds 1/4" - 1/2"; chippy; siderite nodules to 1/2" r.			
1	1' 10"	Coal		0-22	S	N1												Thickness noted by operator. Covered by water. Lower Clarion coal.			

SITE NO 33 - 8



TE/STATION NO. 7-1 (page 1)	LAT °N. 40°28'15"	COUNTY Washington	WEATHERING moderate	JOINTING
AL SAMPLE NO.(S)	LONG °W. 80°25'09"	TWP. Hanover	COMMENTS Uniform highwall around hill.	
COMPANY Harmon Creek Coal Co.	GEOLOGIST wee	15' QUADRANGLE Burgettstown		
NE Florence	PERMIT 18-1	DATE	7 1/2' QUADRANGLE Burgettstown	
AL(S) REPORTED Pittsburgh coal.				

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
						% ABUN - DANCE				THICK - NESS											
						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
4' 5"	Coal	0' 9 1/2"	43 1/2-53	S	N1								B						Cubic fracture; scattered pyrite lenses.		
	Pyrite Fusain	0" - 1/4"																	Parting.		
	Coal	1' 0"	31 1/2-43 1/2		N1								B						Cubic fracture; scattered pyrite lenses.		
	St sh	0" - 1/4"			N1														Parting.		
	Coal	0' 3 1/2"	28-31 1/2		N1								B						Cubic fracture; scattered pyrite lenses.		
	St sh	0" - 1/4"			N1														Parting.		
	Coal	0' 9 1/2"	18 1/2-28		N1								B						Cubic fracture; scattered pyrite lenses.		
	Fusain	0" - 1/8"																	Parting.		
	Coal	0' 4"	14 1/2-18 1/2		N1									MB					Cubic fracture; scattered pyrite lenses.		
	St sh	0" - 3"			N3														Parting.		
	Coal	1' 2 1/2"	0-14 1/2		N1								MB						Cubic fracture; scattered pyrite lenses. Unit 2: Pittsburgh coal.		
	Uc			S																	

SITE/STATION NO. 7-1 (page 2)			LAT °N. 40°28'15"		COUNTY Washington		WEATHERING moderate		JOINTING											
COAL SAMPLE NO.(S)			LONG °W. 80°25'09"		TWP. Hanover		COMMENTS Uniform highwall around hill.													
COMPANY Harmon Creek Coal Co.			GEOLOGIST wee		15' QUADRANGLE Burgettstown															
MINE Florence		PERMIT 18-1	DATE		7½' QUADRANGLE Burgettstown															
COAL(S) REPORTED Pittsburgh coal.																				
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON					ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)		AIR DRYING LOSS (%)	
							% ABUN - DANCE													THICK - NESS
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"									
7	17' 9" - 18' 6"	Ss			G	N6												Mica 1 - 2, c; fine-grained. (Note: Ss and Cl sh, interbedded.)		
		Cl sh	3' 0"			N5											Sandy; fissile; beds 1/32" - 1/8"; papery, chippy. (Note: Ss and Cl sh, interbedded, with 2" - 4" i terbeds.			
		Cl sh	10' 0"		G	N5											Sandy; fissile; beds 1/32" - 1/8"; papery, chippy; 1, c; less sandy upward.			
		Ss	1' 6"		G	N5 - N7											Silty and clayey; fissile; beds 1/32" - 1/8"; mica 2, a.			
		Cl sh	3' 0"		G	N5											Silty; fissile; beds 1/32" - 1/8"; siderite nodules mica 1, c.			
		Cl sh	3" - 1'		G	N2											Fissile; beds -1/32"; papery; fine vitrain lenses,			
6	3' 3" - 3' 11"	Coal	2" - 4"	37-39	S	N1						B- MB						Cubic fracture; slightly shaly.		
		Cl sh	0' 3"		S	N4											Parting; non-silty; fissile; beds 1/8" - ¼"; chippy			
		Coal	2' 4"	6-34	S	N1							B- MB				Coal; 1/4" persistent Sh partings at 1" from bottom 2"-4" shale-fusain-coal parting at 2' 1" - 2' 2" from bottom.			
		Cl sh	2" - 8"		S	N1											Parting, carbonaceous; beds -1/32"; papery.			
		Coal	0' 4"	0-4	S	N1							B				Cubic fracture. Unit 6: Pittsburgh coal.			
5	9' 3"	lss sh	2' 0"		S	N3, N7												Mica 1 - 2, c; plt. frgs., c.		
		St sh	2' 0"		G	N4											Sandy; fissile; beds 1/32" - 1/8"; mica 1, c; plt. f r.			
		St sh	4' 6"		G	N1											Fissile (weathers thinner than ½"); chippy, blocky; mica 1, c; plt. frgs., r; hard, brittle.			
		Cl sh	0' 9"		G	N1											Silty; fissile; beds -1/32"; papery; plt. frgs., c.			
4	0' 9"	Coal		0-9	S	N1						B					Fine cubic fracture; Sh partings to ¼", every 1"-2"			
3	0' - 1'	Cl sh			S	N1											Silty; fissile; beds 1/32" - 1/8"; chippy; plt. frgs leaves, a.			

SITE/STATION NO. 7-1 (page 3)	LAT °N. 40°28'15"	COUNTY Washington	WEATHERING moderate	JOINTING
COAL SAMPLE NO.(S)	LONG °W. 80°25'09"	TWP. Hanover	COMMENTS Uniform highwall around hill.	
COMPANY Harmon Creek Coal Co.	GEOLOGIST wee	15' QUADRANGLE Burgettstown		
MINE Florence	PERMIT 18-1	DATE	7 1/2' QUADRANGLE Burgettstown	
COAL(S) REPORTED Pittsburgh coal.				

S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)			SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE			THICK - NESS			ATTRITUS LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
5	6' 0"	Ls																Clayey; weathers to 5Y 6/1 color; micritic; beds 1" - 5".			
4	2' 6"	Uc				N4												Non-silty; weathered Cs.			
3	1' 2"	Coal		0-14	S	N1												Weathered; appears to be "dirty"; sh partings, c. Redstone? coal.			
2	13' - 15'	Ss	0' 6" - 1' 6"			5Y 6/1												Clayey; mica 1 - 2, c; plt. frgs., rootlets, a; very fine-grained. Clay 0" - 6" at top, locally.			
		lss sh	4' - 5'		G	5Y 6/1												Fissile; beds 1/8" - 1/4"; slabby; mica 1 - 2, c; Fe-stain.			
		Cl sh	5' 6"		G	5Y 4/1												Non-silty; fissile; beds 1/8" - 1/4"; chippy; plt. frgs. c.			
		Cl sh	1' 0"		G	N1												Non-silty; fissile; beds - 1/32"; sandy; plt. frgs., c.			
		St sh	2' 0"		G	N1												Fissile; beds 1/32" - 1/8"; chippy; plt. frgs., r; hard brittle.			
1	1' - 8'	Sts			S	N7												Calcareous; beds 1'. Contains 1' of Uc (N3-N5) in middle, where unit is thickest. Unit thickens by adding to bottom, but at the expense of Unit 10.			
0	10' - 15'	Ss	6' 0"		G	N5												Fissile; beds 1/2" - 2"; mica 1 - 2, c; very fine-grained, silica cement, c.			
		St sh	5' 0"		G	5Y 6/1												Clayey; fissile; beds 1/2" - 1/4"; platy, chippy; mica 1, c; plt. frgs., r; sandy, upward.			
		Cl sh	0' 6"		G	N2												Silty; fissile; beds 1/32" - 1/8"; chippy; mica 1, c; plt. frgs., c.			
		St sh	0' 6"		G	N2												Clayey, carbonaceous; fissile; beds 1/32" - 1/8"; chippy; plt. frgs., c; Fe-stain.			
9	8' 0"	Uc			S	N5												Calcareous, including hard Ls nodules to 6", N5, scattered throughout; frag's. - 1/2".			
8	7' - 9'	Ss			G	N4 - N6												Fissile; beds 6" - 2'; mica 1 - 2, c; fine-grained, silica cement, a. Secondary silica on sand grains. Weathers to 5Y 6/1.			

SITE/STATION NO.		7-2		LAT °N.		40°24'35"		COUNTY		Washington		WEATHERING		fresh		JOINTING									
COAL SAMPLE NO.(S)				LONG °W.				80°23'23"				TWP.		Smith				COMMENTS		Laterally uniform highwall.					
COMPANY				Harmon Creek Coal Co.				GEOLOGIST		wee		15' QUADRANGLE		Burgettstown											
MINE		Florence		PERMIT		18-1		DATE		Aug. 1966		7 1/2' QUADRANGLE		Burgettstown											
COAL(S) REPORTED				Pittsburgh coal.																					
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES						C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						MOISTURE	VOLATILE		FIXED CARBON	ASH								
							% ABUN - DANCE				THICK - NESS														
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"						1/32" - 1/8"	< 1/32"						
T	77' - 80'																								
		Ss	18' 0"			5Y 6/4															Fissile; beds 1/2" - 1' (mostly 1" - 3"); slabby; mica 1 - 2, c; very fine-grained, clay matrix, c.				
8	20' 0"	Sts	2' 0"			5GY 5/2															Fissile; beds 1/4" - 1"; chippy, slabby; limonite pits.				
7	6' 0"	Cs				5GY 4/1															Silty; frag's. 1/2"+; hackly. Small pin-head sized pits filled with limonite.				
		Sts			G	5G 5/1															Frag's. 1/2"+; hackly.				
6	29' 0"	Sts			L	5G 6/1															Clayey, calcareous; frag's. 1/2"+; hackly. Unit 6: Interbedded.				
5	0' 6"	Cs			G	5Y 4/1															Silty; frag's. 1/2"+; chippy, hackly. Stands out as dark zone in exposure.				
		Cl sh	6' 0"		S	N5															Silty; beds 1/32" - 1/4"; hackly; siderite nodules.				
4	13' 0"	lss sh	7' 0"		S	N3, N7															Fissile; beds 1/4" - 1"; mica, c; plt. frgs., r.				
3	3 1/2' - 5'	St sh			S	N1															Subfissile; beds 1/4" - 1/2"; chippy; blocky; hard, brittle.				
		Coal	1' 2 1/2"	44-58 1/2	S	N1									MB										
		St sh	0" - 2"			N1															Parting.				
		Coal	0' 10 3/4"	33 1/4-44		N1									B										
		St sh	1/4" - 1"			N1															Parting. Approaches bone coal.				
		Coal	0' 7"	26-38		N1									B										
		St sh	1/2" - 2"			N1															Parting.				
		Coal	1' 10 1/4"	3 1/4-25 1/2		N1									B										
		Pyrite	0' 1/4"																		Parting.				
2	4' 10 1/2"	Coal	0' 3"	0-3		N1									MB						Unit 2: Cubic fracture; Pittsburgh coal.				
1		Uc			S																				

SITE/STATION NO.	7-4	LAT °N.	40°23'13"	COUNTY	Washington	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)		LONG °W.	80°28'52"	TWP.	Hanover	COMMENTS	Actual operation by Penn-Weir Constr. Co.		
COMPANY	National Steel Co.	GEOLOGIST	wee	15' QUADRANGLE	Burgettstown				
MINE	National Steel	PERMIT	167-1	DATE	Aug. 1966	7 1/2' QUADRANGLE	Burgettstown		
COAL(S) REPORTED	Pittsburgh coal.								

S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						% ABUN - DANCE				THICK - NESS			ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH	
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"										< 1/32"
T	32'																						
4	23' 0"	Ss																Beds 6" - 1' mostly; channel Ss, very fine- to medium-grained (mostly fine- to medium-grained); weathered.					
3	2' - 3'	Cl sh	1' 0"		U	N4												Silty; beds 1/8" - 1/4"; hackly; brittle; plt. frgs., c.					
		Cs -	1' 0"		G	N5											Beds 1/4" - 1/2", frag's. -1/2"; hackly; plt. frgs., a.						
		Cl sh																					
		Sts	0' - 1'		G	N3												Clayey; frag's. 1/2"+; plt. frgs., leaves, a; thin vit-rain stringers.					
2	4' 7 1/2"	Coal	2' 5 1/2"	26-55 1/2	S	N1												-B MB					
		Cl sh	0" - 1/4"		S	N2																	
		Coal	0' 4"	22-26	S	N1												Parting.					
		Cl sh	0" - 1"		S	N3												Parting, silty.					
		Coal	1' 5 1/4"	4 3/4 - 22	S	N1																	
		Clay-Fusain	0' 1/4"		S													Parting, persistent; weathers red-gray.					
		Coal	0' 4 1/2"	0-4 1/2	S	N1												Sh partings to 1/8". Unit 2: Blocky fracture; several shale-pyrite lenses, locally Pittsburgh coal.					
1	2' 0"+	Uc	0' 6"		S	N2											Shaly; frag's. -1/2"; rootlets, a; slickensides.						
		Uc	1' 6"+		G	N5											Frag's. -1/2"; rootlets, a; slickensides.						

SITE/STATION NO. 7-5 (page 1)	LAT °N. 40°23'40"	COUNTY Washington	WEATHERING slight	JOINTING N40°E, N50°W.
COAL SAMPLE NO.(S)	LONG °W. 80°29'00"	TWP. Hanover	COMMENTS Actual operation by Penn-Weir Const. Co.,	
COMPANY National Steel Co.	GEOLOGIST wee	15' QUADRANGLE Burgettstown	Foreman reports Pittsburgh "roof" and "rooster" coals	
MINE National Steel	PERMIT 167-1	DATE	7½' QUADRANGLE Burgettstown	cut out in this area.
COAL(S) REPORTED Pittsburgh coal.				

S T R A T I G R A P H I C D A T A											COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS										
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
2	4' 4"	Coal	2' 3½"	24½-52	S	N1								MB					Blocky fracture.		
		Sh	0" - ¼"											B-					Parting.		
		Coal	0' 3"	21¼-24¼		N1								B- MB					Blocky fracture.		
		Sh	0" - ¼"																Parting.		
		Coal	1' 7½"	1½-21		N1								B- MB					Blocky fracture.		
		Clay- Fusain	0' ½"																Parting.		
		Coal	0' 1"	0-1		N1								B- MB					Blocky fracture. Unit 2: Thin discontinuous shale or pyrite partings throughout, c. Siderite lenses to 1", r. Up to 4" of coal removed when Unit 4 contacts Unit 2.		
1		Uc			S																

TE/STATION NO.	7-5 (page 2)	LAT °N.	40°23'40"	COUNTY	Washington	WEATHERING	slight	JOINTING	N40°E, N50°W
AL SAMPLE NO.(S)		LONG °W.	80°29'00"	TWP.	Hanover	COMMENTS	Actual operation by Penn-Weir Const. Co. Foreman		
COMPANY	National Steel Co.	GEOLOGIST	wee	15' QUADRANGLE	Burgettstown	reports Pittsburgh "roof" and "rooster" coals cut			
INE National Steel	PERMIT 167-1	DATE	7½' QUADRANGLE	Burgettstown	out in this area.				
AL(S) REPORTED	Pittsburgh coal.								

S T R A T I G R A P H I C D A T A																		C O A L C H E M I C A L A N A L Y S E S					C O M M E N T S	
GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
						ANTHRAXYLON				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH										
						% ABUN - DANCE									THICK - NESS									
INTERVAL (TOTAL)						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"											
48'																								
7' 0"	C1 sh				5Y 6/4															Siderite nodules; mica l, c; plt. frgs., c; weathered.				
0' 6"	C1 sh			S	N1															Carbonaceous; beds 1/8" - 1/4"; chippy;plt. frgs., leaves, a; weathered.				
5' - 8'	Uc			S	5Y 6/4 5Y 5/6															Calcareous; Ls nodules in lower half; frag's. -1/2".				
0' 6" - 1' 6"	Ls			G																Clayey; micritic; frag's. +1/2"; Fe-stain; weathered.				
2' - 11'	Cs			G	N6															Silty; vague flat bedding; matrix (including shell fragments?) highly calcareous.				
12' - 28'	Ss			G	N7															Beds 1' - 7' where unit is thickest (NW end); upper several feet, beds 1/2" - 2"; indistinct large-scale cross-bedding dips N45°E; mica l - 3, a; plt. frgs., r; silt to medium-grained, clay matrix. Interbedded 0' - 3' St sh lenses, N3. plt. frgs.,c found locally.				
6' 3"	C1 sh	6' 0"		U	N1 - N2															Silty; fissile; beds 1/32" - 1/4"; chippy; plt. frgs.,a; brittle.				
	Sh	0' 3"		G	N3															Bone to bony; subfissile; plt. frgs., leaves, c; thin vitrain lenses and stringers, c. Unit 3 is locally cut out by Unit 4.				

SITE/STATION NO. 7-6			LAT °N. 40°24'38"			COUNTY Washington			WEATHERING fresh			JOINTING																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
COAL SAMPLE NO.(S)			LONG °W. 80°27'59"			TWP. Hanover			COMMENTS Actual operation by Penn-Weir Const. Co.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
COMPANY National Steel Co.			GEOLOGIST wee			15' QUADRANGLE Burgettstown																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
MINE National Steel			PERMIT 167-1			DATE Aug. 1966			7½' QUADRANGLE Burgettstown																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL								PROXIMATE (%)				ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH	SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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SITE/STATION NO.		7-8		LAT °N.		40°23'09"		COUNTY		Washington		WEATHERING		fresh		JOINTING					
COAL SAMPLE NO(S)		7-C-1		LONG °W.		80°25'28"		TWP		Smith		COMMENTS		Elsewhere in highwall fresh water Ls is visible, 15' - 20' above Unit 7.							
COMPANY Penn Weir Const. Co.				GEOLOGIST		rds		15' QUADRANGLE		Burgettstown											
MINE Penn Weir #802		PERMIT 173-3		DATE 7-24-68		7 1/2' QUADRANGLE		Burgettstown													
COAL(S) REPORTED				Pittsburgh main seam.																	
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES					C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE			THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
T	19'																				
8		cover																			
7	3' 0"	Ss			S																
6	6' 0"	Cl sh			S	5Y 3/1													Appears to be more uniformly bedded than unit 4.		
5	2' 0"	Ss			S	N6													Bedding varies from 2" - 6' thick; rubbly; mica 3, c medium-grained; hard; frag's. + 1/2".		
4	0' 6"	Cl sh			S	5Y 3/1													Semi-plastic; rubbly; slickensides, a; frag's. + 1/2".		
3	0' 6"	Cl sh			S	N2													Interlaminated; subfissile; slabby; plt. frgs., leave a; hard; slickensides; frag's. 1/32" - 1/8".		
2	7' 4 1/2"	Coal	1' 0"	76 1/2 - 88 1/2	S	N1	+				+	+	MD	2.1	34.0	45.3	18.6	5.68	11420	Friable.	
		Cl	1' 1"		S	N4														Parting, semi-plastic; hackly; plt. frgs., c.	
		Coal	0' 8"	55 1/2 - 63 1/2	S	N1	+				+	+	D	0.9	41.6	43.3	14.1	7.54	12340	Generally dull.	
		Cl sh	0' 1"		S															Parting.	
		Coal	1' 4"	38 1/2 - 54 1/2	S	N1	+				+	+		1.0	43.3	48.7	7.1	3.56	13453	Very hard; vitreous. Attritus Luster, MB - MD.	
		Cl sh	0' 1 1/4"		S															Parting.	
		Coal	1' 1"	25 1/4 - 38 1/4	S	N1	+				+	+	MD	1.1	40.0	50.1	8.8	2.37	13091	Contains a thin parting 4" from bottom.	
		Cl sh	0' 1 1/4"		S															Parting; carbonaceous.	
		Coal	1' 1"	12-25	S	N1	+				+	+	MD	1.0	41.0	48.4	9.6	4.44	13091		
Coal	1' 0"	0-12	S	N1	+				+	+	MD	1.1	41.4	46.2	11.2	4.92	12776				
														1.2	40.3	47.4	11.1	4.50	12766	Seam average of 7-C-1, Pittsburgh main seam coal.	
1		Uc			S	N3														Semi-plastic.	

SITE/STATION NO.	28-2	LAT °N.	40°07'19"	COUNTY	Washington	WEATHERING	slight	JOINTING: N40°W, one good direction only.
COAL SAMPLE NO.(S)		LONG °W.	79°53'52"	TWP.	Twilight	COMMENTS		
COMPANY	Protz Bros. Coal Co.	GEOLOGIST	wee/wrw	15' QUADRANGLE	Brownsville			
MINE	Twilight	PERMIT	469-1	DATE	6-4-68	7 1/2' QUADRANGLE	California	
COAL(S) REPORTED	Pittsburgh main seam and rider coals.							

S T R A T I G R A P H I C D A T A															COAL CHEMICAL ANALYSES					C O M M E N T S								
NUMBER	GROSS UNIT	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS								
							ANTHRAXYLON			THICK- NESS	ASH	SULFUR (%)		AIR DRYING LOSS (%)	BRITISH THERMAL UNITS													
							% ABUN- DANCE																					
	INTERVAL (TOTAL)						> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"		MOISTURE	VOLATILE	FIXED CARBON										
T	55'																											
0		cover																										
9	7'+	Cs Ss	1' 0" 6'+		G	5Y 5/2 N6																						Silty; beds 1/2" - 1". Beds 3" - 3"; Fe-stain?; fine-grained; weathered. Unit 9: Interbedded.
8	9' 0"	Cs			G	N3																						Chippy; plt. frgs., c; 5Y 4/4 in upper half.
7	0' 6"	Cs			G	N1																						Platy; plt. frgs., c; purple-brown SO ₄ stain.
6	0' 6"	Cs			S	N6																						Blocky; siderite nodules to 6"; weathered.
5	0' 11 1/4"	Coal	0' 1/2"	103/4-11 1/4	S	N1																						Parting.
		Cl	0' 2"																									Parting.
		Coal	0' 4 1/2"	4 1/4-8 3/4		N1																						Parting.
		Cl	0' 1/4"																									Parting.
		Coal	0' 1"	3-4		N1																						Unit 5: Extremely weathered. Pittsburgh rider coal.
		Cl	0' 1/2"																									
4	30' 0"	Cl sh	10' 0"		S	N2																						Silty; chippy; siderite zones.
		Sh	10' 0"		G	N3																					Silty; chippy; mica l, a; leaves, r.	
		Cl sh	10' 0"		G	N2																					Silty; chippy; siderite zones.	
3	0' 4"	Coal		0-4	S	N1	+					+	+	B													Blocky.	
2	1' 6"	Cs			S	N3																						Plt. frgs., leaves, c.
1	6' - 6' 6"	Coal		0-78	S	N1																						Not the correct thickness according to Mr. Protz. Pittsburgh main seam coal. Not well exposed.



[illegible]

SITE/STATION NO.		37-3		LAT °N.		40°22'38"		COUNTY		Westmoreland		WEATHERING		moderate		JOINTING					
COAL SAMPLE NO(S)		37-C-3		LONG °W.		79°40'44"		TWP		Penn		COMMENTS									
COMPANY				Heley Bros. Coal Co.				GEOLOGIST		rds		15' QUADRANGLE		Greensburg							
MINE				Pleasant Valley				PERMIT		459-1		DATE		7-22-68		7 1/2' QUADRANGLE		Murrysville			
COAL(S) REPORTED				Redstone																	
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN- DANCE			THICK- NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"							
T	22'																				
7		cover																			
6	6'+	Cl sh			G	N5														Silty; slabby; mica 2, c; beds 1/4" - 1/2".	
5	5' 9"	lsc sh	2' 3"		S	N4, N7														Chippy, slabby; mica 2, a; beds 1/32" - 1/8".	
		lsc sh	3' 6"		S	5Y 4/1, 5Y 6/1														Chippy, slabby; beds -1/32".	
4	5' 6"	Sts			S	N5 - N6														Slabby; upper 6" becomes shaly with beds 1/4" - 1/2" thick pyrite near bottom, c; beds 1/2" - 3".	
3	1' 3"	Cl sh			G	N2														Silty; chippy, equant; pyritic, carbonaceous at bottom beds 1/32" - 1/8".	
2	4' 1/2"	Coal	1' 5"	31 1/2 - 48 1/2	S	N1	+				+				D	1.4	34.4	53.0	11.2	2.55	13066 Sulfur bloom on weathered surface, c; vitrain thickens upward.
		Coal	0' 9"	22 1/2 - 31 1/2		N1		+				+			B	1.6	33.6	53.4	11.4	3.72	12970 Pyrite.
		Cl sh	0' 1/2"																		Parting; carbonaceous streaks; pyrite, a.
		Coal	1' 3"	7-22		N1		+				+			B	1.3	36.2	52.9	9.6	2.17	13308 Hard; conchoidal fracture.
		Coal	0' 7"	0-7		N1		+				+			MB	1.5	31.8	53.4	13.3	2.13	12752 Knife-edge pyrite streaks, a; 1/4" thick Cl sh parting, N2, hard, at top.
																1.4	34.4	53.1	11.1	2.59	13078 Seam average of 37-C-3, Redstone coal.
1		Uc			S	N2															Plt. frgs., c; pyrite; coaly streaks; 1/2 mm whitish spots?, c - a.

SITE/STATION NO. 37-4		LAT °N. 40°26'40"		COUNTY Westmoreland		WEATHERING moderate		JOINTING	
COAL SAMPLE NO(S)		LONG °W. 79°36'03"		TWP. Franklin		COMMENTS Stripping had stopped at top of unit 1. Units 5 -			
COMPANY J. M. Hall		GEOLOGIST rds		15' QUADRANGLE Greensburg		10 inaccessible, described only in gross charact-			
MINE Junior #10		PERMIT 141-2		DATE 7-11-68		7 1/2' QUADRANGLE Slickville		eristics. Pictures taken.	
COAL(S) REPORTED		Pittsburgh main seam or roof coal?, and/or rooster coal.							

GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						ATTRITUS LUSTER	COAL CHEMICAL ANALYSES				COMMENTS
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON		SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS							
							% ABUN- DANCE	THICK- NESS				MOISTURE		VOLATILE	FIXED CARBON	ASH		
																	> 60	
T	76'																	
0	20' 0"	cover																
9	16' 0"	St sh			G												Possibly a Ss lens, overlain by a St sh; beds 3" - 1'.	
8	0' 4"	Coal		0-4	S	N1												
7	20' 0"	Ls			S												Massive fresh water limestone in beds 3' - 5' thick, separated by thin (2"+) shale beds.	
6	8' 0"	St sh			S												More massive bedded than unit 5.	
5	8' 0"	St sh			S												Chippy.	
4	1' 0"	Cl sh			S												Thin coal stringers and partings throughout.	
3	2' 9 1/2"	Coal	0' 6"	27 1/2-33 1/2	S	N1												
		Sh	0' 3"		S												Parting.	
		Coal	0' 2"	22 1/2-24 1/2	S	N1												
		Sh	0' 1"		S												Parting.	
		Coal	0' 7"	14 1/2-21 1/2	S	N1												
		Sh	0' 2 1/2"		S												Parting.	
		Coal	1' 0"	0-12	S	N1											Unit 3 is either Pittsburgh roof, or rooster coal.	
2		Cl			S	N2											Semi-plastic.	
1		Coal			S	N1											Probably is Pittsburgh main seam, but may be the Pittsburgh roof coal.	

SITE/STATION NO.		38-1		LAT °N.		40°12'25"		COUNTY		Westmoreland		WEATHERING		fresh		JOINTING							
COAL SAMPLE NO.(S)		38-C-1		LONG °W.		79°35'19"		TWP.		Hempfield		COMMENTS											
COMPANY				Walter Green, Inc.				GEOLOGIST		adg		15' QUADRANGLE		Connellsville									
MINE		Evans strip		PERMIT		250-4		DATE		7-28-66		7½' QUADRANGLE		Mt. Pleasant									
COAL(S) REPORTED				Upper Freeport (E).																			
S T R A T I G R A P H I C												D A T A				COAL CHEMICAL ANALYSES				C O M M E N T S			
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS				
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH		
							% ABUN - DANCE																
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"
T	23'																						
7		cover																Soil.					
6	12' 0"	Ss				N5												Beds ½" - 3"; mica, r; very fine- to fine-grained; clay matrix and dark minerals, r.					
5	6' 0"	St sh			L	N5												Beds ¼" - ½"; plt. frgs., c.					
4	0' 6"	Sh			S	N1												Fissile; beds -1/32" - 1/8".					
3	0' 8"	Bone			S	N1												Includes black Sh and coaly streaks.					
2	4' 1"	Coal	2' 9"	16-49	S	N1		+		+	+	MD	0.7	30.0	62.8	6.5	1.71	13970					
		Cl sh	0' 1½"																				
		Coal	1' 2½"	0-14½		N1		+		+	+	MD	0.8 0.7	32.1 30.6	62.4 62.7	4.7 6.0	1.67 1.70	14460 14119	Seam average of 38-C-1, Upper Freeport (E) coal.				
1	0' 6"+	Uc			S	N5																	

SITE/STATION NO.	38-2	LAT °N.	40°09'26"	COUNTY	Westmoreland	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO(S)	38-C-2	LONG °W.	79°35'06"	TWP.	E. Huntingdon	COMMENTS	Limestone encountered below coal.		
COMPANY	Marsalino Coal & Coke Co.	GEOLOGIST	adg	15' QUADRANGLE	Connellsville				
MINE	Love strip	PERMIT	71-11A	DATE	7-28-66	7½' QUADRANGLE	Mt. Pleasant		
COAL(S) REPORTED	Redstone.								

S T R A T I G R A P H I C D A T A																			COAL CHEMICAL ANALYSES					C O M M E N T S	
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS						
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH				
							% ABUN- DANCE			THICK- NESS															
							> 60	30 - 60	15 - 30*	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"		
T	11'																								
4		cover																Soil.							
3	8' 0"	Cl sh				N5												Beds 1/4" - 1/2" (gradational bedding); silty and "olive-green" upward.							
2	2' 11"	Bone Coal	0' 3" 2' 8"	0-32	S	N1		+	+		+	+	D	0.8	29.4	60.9	8.9	1.92	13500	Conch. fracture. <u>38-C-2</u> , Redstone coal.					
1		Cl			S	N5																			

SITE NO. 38-3

SITE/STATION NO.		38-4		LAT °N		40°13'31"		COUNTY		Westmoreland		WEATHERING		moderate		JOINTING													
COAL SAMPLE NO(S)		38-C-3		LONG °W		79°41'23"		TWP.		Sewickley		COMMENTS		Units 4 - 5 inaccessible. Fresh water is located															
COMPANY		Geary Ridge Coal Co.		GEOLOGIST		rds		15' QUADRANGLE		Connellsville		to the west of this site in a partially backfilled																	
LINE		Yukon		PERMIT		429-1		DATE		7-10-68		7 1/2' QUADRANGLE		Smithton		portion of the stripping.													
COAL(S) REPORTED		Redstone																											
S T R A T I G R A P H I C D A T A																		COAL CHEMICAL ANALYSES						C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS										
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH								
							% ABUN- DANCE			THICK- NESS																			
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										1/32" - 1/8"	< 1/32"						
1	22'																	Coals analyzed M/7-25-69											
5		cover																											
4	16' 0"	Cl sh			G	5Y 4/2												Silty; platy; flaggy; numerous pyrite flecks & streaks at bottom; beds -1/32" - 1/8".											
3	2' 5"	Cl sh	1' 3"		S	5Y 4/1												Silty; flaggy; pyrite streaks; beds 1/32" - 1/8".											
		Cl sh	1' 2"		G	N2											Chippy; slabby; beds 1/32" - 1/8".												
2	3' 11"	Coal	0' 2"	45-47	S	N1												Not sampled or described.											
		Cl sh	0' 3 1/2"			N3												Parting; chippy, slabby; coaly streaks.											
		Coal	1' 0"	29 1/2 - 41 1/2		N1	+					++	MD	1.0	32.1	52.7	14.2	3.41	12703	Knife-edge pyrite lenses, c.									
		Coal	0' 9"	20 1/2 - 29 1/2		N1	+					+	B	1.1	32.8	53.5	12.6	1.87	12945										
		Coal	0' 8"	12 1/2 - 20 1/2		N1	+					+	B	1.1	34.6	57.4	6.8	2.48	13792	Pyrite lenses to 1/8" thick.									
		Coal	0' 7 1/2"	5-12 1/2		N1	+					+	MB	1.2	33.4	57.0	8.4	2.38	13696										
		Coal	0' 5"	0-5		N1	+					+	MB	1.2	29.1	54.9	14.7	3.04	12582	Thin pyrite lenses.									
												1.1	32.6	54.8	11.4	2.67	13130	Seam average of 38-C-3, Redstone coal. Unit 2: hard.											
1		Cs			S	N1												Coaly streaks.											

SITE/STATION NO.		47-1		LAT °N.		40°15'46"		COUNTY		Westmoreland		WEATHERING		slight		JOINTING						
COAL SAMPLE NO(S)		47-C-1		LONG °W.		79°23'49"		TWP.		Unity		COMMENTS										
COMPANY				Piccolomini Coal Co.				GEOLOGIST		adg		15' QUADRANGLE		Latrobe								
MINE		Hostetter strip		PERMIT		159-3		DATE		7-27-66		7 1/2' QUADRANGLE		Latrobe								
COAL(S) REPORTED				Pittsburgh main seam coal.																		
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S					
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE					FIXED CARBON	ASH
							% ABUN - DANCE															
							THICK - NESS															
		> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"	< 1/32"													
T	57'																					
7	30' 0"	Ss				N6												Beds 1/2" - 1'; mica, r; very fine- to fine-grained; clay matrix, c; dark minerals, r; carbonaceous material, r. A thin discontinuous coal -6" in lower portion.				
6	0' 2"	Coal		0-2	S	N1												Shaly.				
5	15' 0"	St sh			S	N3												Beds 1/4" - 1/2"; hackly; plt. frgs., a.				
4	2' 0"	Ss & Sts			S													Interbedded. Fissile; beds 1/4" - 1/2"; plt. frgs., a; silt to very fine-grained, clay matrix and dark minerals, r; carbonaceous material, c.				
3	1' 8"	Cl sh			S													Beds 1/32" - 1/8"; hackly; coaly streaks.				
2	7' 9 1/2"	Coal	2' 5"	64 1/2-93 1/2	S	N1		+		+	D	0.7	26.5	61.4	11.4	0.96	13400	Slightly bony.				
		Bone	0' 1 1/2"																			
		Coal	2' 5 1/2"	33 1/2-63		N1		+	+		+	MD	1.2	26.6	66.8	5.4	0.63	13800				
		Sh	0' 2"															Parting; bony.				
		Coal	1' 0"	19 1/2-31 1/2		N1		+	+		+	MD	0.9	27.7	67.3	4.1	0.75	14500				
		Sh	0' 1 1/2"															Soft.				
		Coal	1' 7"	0-19		N1		+	+		+	MD	0.8 0.9	26.6 26.7	67.2 65.2	5.4 7.2	0.80 0.79	14190 13847	Seam average of 47-C-1, Pittsburgh main seam coal. Unit 2: 5° dip N70°W.			
1		Uc			S	N6																

SITE/STATION NO.	47-2	LAT °N.	40°15'07"	COUNTY	Westmoreland	WEATHERING	fresh	JOINTING	
COAL SAMPLE NO.(S)	47-C-2	LONG °W.	79°24'32"	TWP.	Unity	COMMENTS			
COMPANY	C. W. Brown	GEOLOGIST	adg	15' QUADRANGLE	Latrobe				
MINE	Whitney strip	PERMIT	273-1	DATE	7-27-66	7 1/2' QUADRANGLE	Latrobe		
COAL(S) REPORTED	Pittsburgh main seam and roof coals.								

S T R A T I G R A P H I C D A T A																	COAL CHEMICAL ANALYSES					C O M M E N T S	
NUMBER	GROSS UNIT	INTERVAL (TOTAL)	LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
								ANTHRAXYLON							ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
								% ABUN - DANCE				THICK - NESS											
								> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"	1/32" - 1/8"									
1		24'																					
8		6' +	Sh				N4														Beds 1/32" - 1/4".		
7		6' 0"	lss sh			L	N6														Beds 1/4" - 3"; mica, r; silt to very fine-grained; clay matrix and dark minerals, r.		
6		2' 0"	Cl sh			U	N5														Beds 1/4" - 1/2"; hackly.		
5		0' 2"	Coal		0-2	S															Shaly; beds 1/32" - 1/8".		
4		0' 3"	Coal		0-3	S	N1							B							Thin Sh partings. Pittsburgh roof coal?		
3		1' 3"	Cl sh			S	N5														Beds 1/4" - 1/2"; hackly.		
2		7' 9 1/2"	Coal	2' 3"	66 1/2-93 1/2	S	N1	+	+			+	+	D	1.0	27.4	61.5	10.1	0.95		13570	Slightly bony.	
			Bone	0' 1"																			
			Coal	3' 5"	24 1/2-65 1/2		N1	+	+			+		MD	1.0	27.1	67.0	5.0	0.80		14250		
			Cl	0' 1/2"																			Parting; soft.
			Coal	2' 0"	0-24		N1	+	+			+	+	MD	0.9 1.0	26.2 27.0	65.4 65.0	7.5 7.1	0.83 0.85		13940 13972	Pyrite partings. Seam average of 47-C-2, Pittsburgh main seam coal.	
1		1' 0" +	Uc			S	N6																

SITE/STATION NO.		48-3		LAT °N.		40°11'48"		COUNTY		Westmoreland		WEATHERING		moderate		JOINTING							
COAL SAMPLE NO(S)		48-C-3		LONG °W.		79°22'20"		TWP.		Cook		COMMENTS * Survey identification; Miller "B"? similar to unit 2, Site 48-2 (mine permit 242-2)											
COMPANY				C. W. Brown				GEOLOGIST		rds		15' QUADRANGLE		Donegal									
MINE		Brown #2		PERMIT		273-2		DATE		6-20-68		7 1/2' QUADRANGLE		Stahlstown									
COAL(S) REPORTED				Upper Freeport (E) *																			
S T R A T I G R A P H I C D A T A										COAL CHEMICAL ANALYSES							C O M M E N T S						
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS			
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON				ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON	ASH							
							% ABUN - DANCE																
							> 60	30 - 60	15 - 30	0 - 15							> 1/4"					1/8" - 1/4"	1/32" - 1/8"
T	22'																			Coals analyzed M/7-25-69			
5		cover																					
4	18' 0"	Sts			G	N5														Mica l, c; carbonaceous streaks.			
3	0' 10"	Ss				N5														Slabby; fine-grained; thin carbonaceous streaks; beds 1/2" - 3".			
2	3' 10 1/2"	Coal	0' 8"	38 1/2 - 46 1/2	S	N1														Bone, not sampled or examined.			
		Coal	1' 0"	26 1/2 - 38 1/2	S	N1	+			+	MD	0.8	26.1	62.1	11.0	2.65		13550	Very thin fusain streaks, c.				
			0' 1 1/2"		S														Parting, clay and fusain.				
		Coal	2' 2"	0-26	S	N1						0.6	28.4	62.6	8.4	2.20		13817	Pyrite lenses, a, lower 3" - 4". Wet.				
											0.7	27.7	62.5	9.2	2.34		13733	Seam average of 48-C-3, Upper Freeport (E)? coal.					
1		Uc			S	N7														Plastic; N3 with coal stringers in upper 2" - 3".			

SITE/STATION NO.	48-4	LAT °N.	40°05'12"	COUNTY	Westmoreland	WEATHERING	moderate	JOINTING	
COAL SAMPLE NO(S)	48-C-4	LONG °W.	79°21'11"	TWP	Saltlick	COMMENTS	An apparent normal fault (strike of N 35° E, SE -i,		
COMPANY	Purco Coal Co.	GEOLOGIST	rds	15' QUADRANGLE	Donegal	displaces all strata 3½ feet.			
MINE	Brown strip	PERMIT	413-2	DATE	7-8-68	7½' QUADRANGLE	-		
COAL(S) REPORTED	Miller "B"								

S T R A T I G R A P H I C D A T A													COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB - UNIT)	COAL BENCHES CUMULATIVE , IN INCHES	CONTACT(UPPER)	COLOR (MUNSELL)	COAL							PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS	LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN - DANCE				THICK - NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"										
T	25'																		Coals analyzed M/7-25-69			
6		cover																	Inaccessible.			
5	10'+	Cl sh																	Upper part extremely weathered to Cl. Inaccessible.			
4	10' 0"	lsc sh			S	N3, 5YR 5/1													Flaggy; Fe-stain on upper 5'; more silty and thicker laminae upward; beds 1/32" - 1/8".			
3	1' 6"	Cs			S	N2													Flaggy; slightly silty upward; beds 1/2" - 3".			
2	3' 4 1/2"	Coal	0' 1 1/2"	39-40 1/2	S	N1													Bony, with coaly streaks. Not sampled or examined.			
		Coal	1' 2"	25-39		N1		+		+	MD	1.0	24.8	57.1	17.2	1.50		12340				
		Coal	0' 6"	19-25		N1		+		+	MD	0.9	28.6	64.4	6.0	1.11		14276				
		Coal	1' 7"	0-19		N1		+		+	MB	1.1	28.3	66.5	4.1	1.47		14567	Sulfur bloom on weathered surface. Apparent normal fault displaces the coal its thickness.			
													1.0	27.1	62.8	9.1	1.43		13723	Seam average of 48-C-4, Miller "B" coal.		
1		Uc			S	N3													Plt. frgs., c; weathered silty Cs.			

SITE/STATION NO.		57-1		LAT °N.		40°16'38"		COUNTY		Westmoreland		WEATHERING		slight		JOINTING					
COAL SAMPLE NO(S)		57-C-2, -3, -4		LONG °W.		79°12'44"		TWP.		Ligonier		COMMENTS		See Site No. 57-2 (mine permit 481-1) for continuation of stratigraphic column (units 9 - 11).							
COMPANY		Bridge Coal Co.		GEOLOGIST		wee		15' QUADRANGLE		New Florence				160' interval to Pittsburgh. Sewickley rather than Redstone?							
MINE		Wilpen #1		PERMIT		481-1		DATE		6-9-68		7 1/2' QUADRANGLE		Wilpen							
COAL(S) REPORTED		Redstone.																			
S T R A T I G R A P H I C D A T A												COAL CHEMICAL ANALYSES					C O M M E N T S				
GROSS UNIT		LITHOLOGY	INTERVAL (SUB-UNIT)	COAL BENCHES CUMULATIVE, IN INCHES	CONTACT (UPPER)	COLOR (MUNSELL)	COAL						PROXIMATE (%)				SULFUR (%)	AIR DRYING LOSS (%)	BRITISH THERMAL UNITS		
NUMBER	INTERVAL (TOTAL)						ANTHRAXYLON						ATTRITUS LUSTER	MOISTURE	VOLATILE	FIXED CARBON					ASH
							% ABUN-DANCE			THICK-NESS											
							> 60	30 - 60	15 - 30	0 - 15	> 1/4"	1/8" - 1/4"									
Coals analyzed M/7-25-69																					
T	46' - 48'																				
8	38' 0"	Ss				G 5Y 6/2 - 5Y 6/4												Clayey; slabby; silt to very fine-grained, good sorting, clay matrix; Fe-stain; flat-bedded; 2 or 3 lenses to 1 1/2" thick in upper half.			
7	1' 6" - 3'	Coal	0" - 6"			G N1		+	+		+	+	D					Bone; variable fracture; grades laterally into upper 6" of underlying St sh.			
		St sh	1' 6" - 3'			L N1											Beds 1/32" - 1/8"; carbonaceous; fissile; chippy, hackly; plt. frgs., leaves, a; slickensides; coal and vitrain stringers to 1" thick.				
6	0' 7"	Coal		0-7		G N1		+			+	+	D	0.9	23.1	48.6	27.5	1.53	12123	Cubic fracture; contains three St sh partings, N1, to 1" thick. 57-C-4, Redstone coal.	
5	0' 8"	Sts				G N2 - N3														Frag's. -1/2"; equant, hackly; plt. frgs., c.	
4	0' 2"	Coal		0-2		G N1		+			+	+	MB	1.4	22.3	43.3	33.1	3.96	9533	Cubic fracture. 57-C-3, Redstone coal.	
3	0' 6"	Sts - St sh				G N2 - N3														Beds 1/4" - 1/2" at bottom to frag's. -1/2" upward; slabby, equant, blocky; plt. frgs.; locally St sh.	
2	4' 8"	Coal	0' 8"	48-56		G N1			+		+	+	MD	1.3	17.8	39.2	41.7	2.55	8202	Cubic fracture; lower 2" is bony.	
		Coal	1' 1"	35-48		S N1			+			+	B	1.0	25.1	60.7	13.1	1.15	13091	Cubic fracture.	
		Coal	2' 3"	8-35		S N1		+			+	+	+	B	0.8	25.9	59.0	14.2	1.44	12851	Cubic fracture; nonpersistent pyrite parting 0" - 1" at top.
		Coal	0' 8"	0-8		S N1		+			+	+	+	MB	0.8	28.8	64.4	6.0	0.77	14325	Splintery to granular; fusain, a; nonpersistent pyrite parting 0" - 1" at top.
															1.0	25.0	57.4	16.7	1.44	12453	Seam average of 57-C-2, Redstone coal.
1		Cl sh				S N5														Beds -1/32"; papery.	
	Note:																			Pennsylvania Geological Survey Atlas A 57 indicates Coal (units 2, 4, & 6) to be Redstone.	

SITE NO. 57-2



